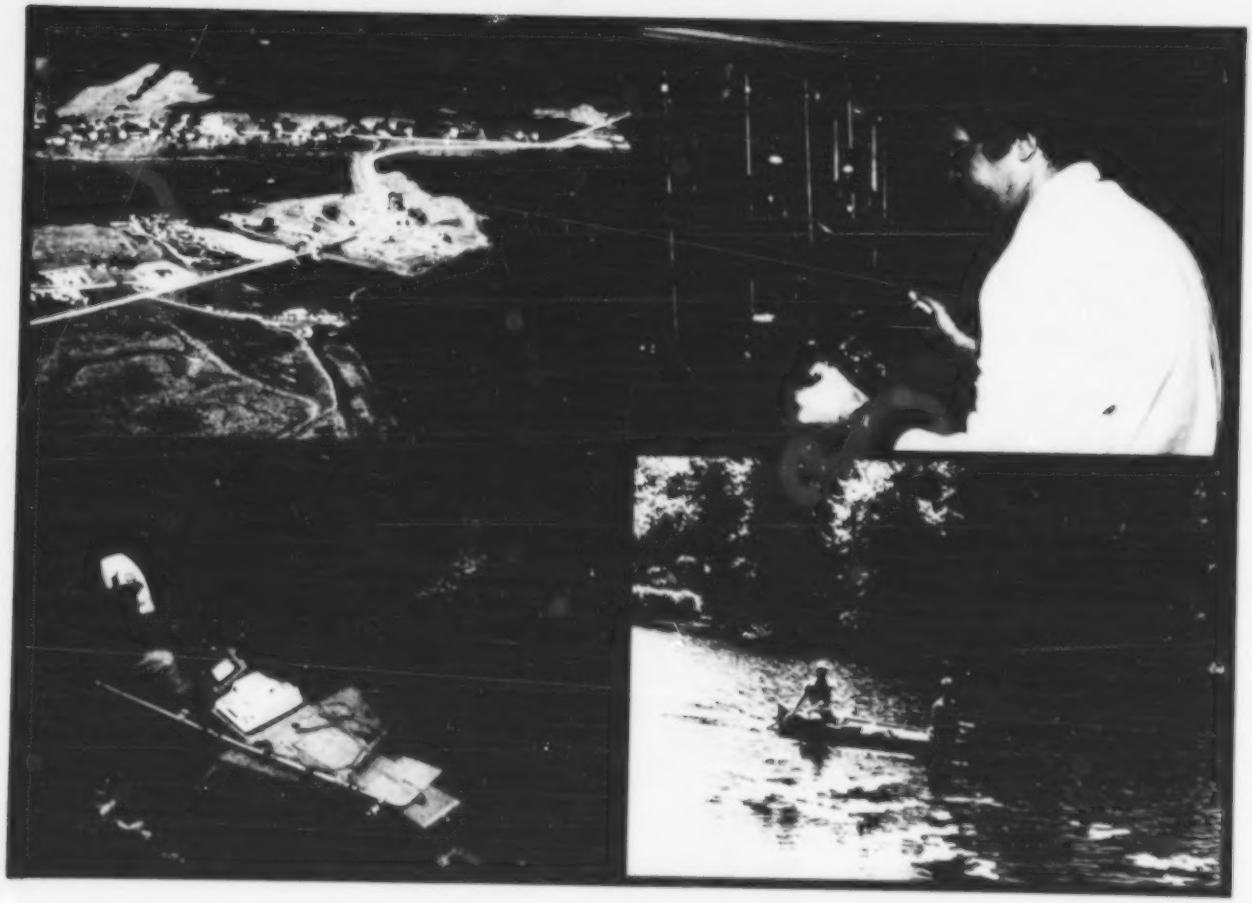
Environment Canada
Environnement Canada

Conservation and Protection
Conservation et Protection

# RESULTS OF 1987 WATER QUALITY OBJECTIVES COMPLIANCE MONITORING OF THE INTERNATIONAL SAINT JOHN RIVER BASIN

## IWD-AR-WQB-89-150



Canada

INLAND WATERS DIRECTORATE
ATLANTIC REGION
WATER QUALITY BRANCH
MONCTON, NEW BRUNSWICK

# RESULTS OF 1987 WATER QUALITY OBJECTIVES

# COMPLIANCE MONITORING OF THE

# INTERNATIONAL SAINT JOHN RIVER BASIN

IWD-AR-WQB-89-150

Kenneth G. MacKeigan

Harold S. Bailey

Water Quality Branch

Atlantic Region

Moncton, New Brunswick

May 1991

We Recycle

TABLE OF CONTENTS


| | PAGE |
|---|---|
| ABSTRACT | iii |
| RESUME | iv |
| INTRODUCTION | 1 |
| METHODOLOGY | 3 |
| RESULTS AND DISCUSSION | 5 |
| Objective Compliance | 5 |
| Temperature | 5 |
| Dissolved Oxygen | 6 |
| pH | 7 |
| Phosphorus | 8 |
| Non-filterable Residue | 10 |
| Aluminum | 10 |
| Copper | 11 |
| Lead | 11 |
| Zinc | 11 |
| Mercury | 12 |
| Quality Assurance/Quality Control | 13 |
| CONCLUSIONS | 16 |
| ACKNOWLEDGEMENTS | 17 |
| REFERENCES | 18 |

TABLES

Table 1: International Saint John River Sampling Stations, 1986-1987
Table 2: Parameters and their Water Quality Objectives
Table 3: Water Temperature, Dissolved Oxygen and pH Measurements
Table 4: Phosphorus, Non-filterable Residue and Aluminum Values
Table 5: Extractable Copper, Lead, Zinc and Mercury Values
Table 6: Sequential Triplicate Sample Results
Table 7: Results of Analysis for Extractable Metals.
Table 8: Field Blank Results of Analysis for Dissolvd and Total Phosphorus

MAPS

MAP 1: Canadian Monitoring Sites in the International Portion of the Saint John River

FIGURES

Figure 1: Major Components of a Box and Whisker Plot
Figure 2: Water Temperature (C)
Figure 3: Dissolved Oxygen (mg/L)
Figure 4: Dissolved Oxygen (% Saturation
Figure 5: Laboratory Measured pH
Figure 6: Field Measured pH
Figure 7: Total Phosphorus (mg/L)
Figure 8: Dissolved Phosphorus (mg/L)
Figure 9: Non-Filterable Residue (mg/L)
Figure 10: Extractable Aluminum (mg/L)
Figure 11: Dissolved Aluminum (mg/L)
Figure 12: Extractable Copper (mg/L)
Figure 13: Extractable Lead (mg/L)
Figure 14: Extractable Zinc (mg/L)
Figure 15: Extractable Mercury (µg/L)

## ABSTRACT

This report compares the water quality data collected in the International Saint John River, between October, 1986 and March, 1988, with the Water Quality Objectives for selected parameters. The data resulting from the grab sampling of eleven sites in the basin on ten separate occasions were compared to the established "safe" and "acute" objectives. The median values for the selected parameters, complied with the "safe" objectives with the exception of total and dissolved phosphorus at the Tinker Station on the Aroostook River. The median values of 0.036 mg/L for total and 0.033 mg/L for dissolved phosphorus exceeded the "safe" objective for an impoundment of 0.025 mg/L. Nevertheless, nine of the eleven sites had median values below 0.015 mg/L, the concentration which the State of Maine considers indicative of a potential problem. Individual dissolved oxygen values as percent saturation also fell below the lower "safe" objective of 80% and exceeded the upper "safe" objective of 110% saturation on numerous occasions. Copper, lead, zinc and mercury values were well below the respective Water Quality Objectives and for the most part below the detection limit.

Sampling dates for the reported period did not coincide with peak spring runoff or rain events. This resulted in only one detectable non-filterable residue value and accordingly, lov total phosphorus and total aluminum values.

## RÉSUMÉ

Dans ce rapport, les données recueillies entre octobre 1986 et mars 1988 concernant la qualité des eaux internationales de la rivière Saint-Jean sont comparées aux objectifs de la qualité des eaux recommandés our certains paramètres choisis. Les données proviennent d'échantillons ponctuels qui ont été recueillis à onze stations dans ce bassin et à dix occasions distinctes. Ces données sont comparées aux objectifs "sans danger" et "aigus" déjà établis. Les valeurs médianes des paramètres choisis se conformaient toutes aux objectifs "sans danger", sauf pour le phosphore total et dissout à la station Tinker sur la rivière Aroostook. Les valeurs médianes du phosphore total et dissout étaient de 0.036 mg/L et 0.033 mg/L respectivement, dépassant ainsi l'objectif "sans danger" fixé à 0.025 mg/L pour les eaux d'un indiquement. Néanmoins, sur les onze sites, il y en avait neuf que les concentrations médianes de phosphore étaient inférieures à 0.015 mg/L, soit le niveau de concentration considéré par l'État de Maine comme pouvant causer des floraisons d'algues. Aussi, plusieurs valeurs individuelles d'oxygène dissout, calculées en pourcentage de saturation, étaient inférieures à l'objectif inférieur "sans danger" de 80% de saturation ou dépassaient l'objectif supérieur "sans danger" de 110% de saturation.

Les concentrations de cuivre, de plomb, de zinc et de mercure extractibles dans l'eau échantillonnée étaient considérablement inférieures aux objectifs "sans danger" recommandés pour ces paramètres. D'ailleurs, très peu de données étaient au-dessus des limites de détection respectives.

Les dates d'échantillonnage pour la période en questionne coincidaient ni au point maximal de l'hydrographe au printemps, ni durant d'importantes pluies. Par conséquent, la concentration de solides en suspension ne fut détectée qu'une seule fois durant la période d'échantillonnage. Ceci explique le fait que les concentrations totales de phosphore et d'aluminum étaient relativement basses.

# INTRODUCTION

The Saint John River Basin, with a total drainage surface area of approximately 55,900 km$^2$ is considered one of the largest on the Atlantic seaboard of North America. While the majority of the basin is located within the province of New Brunswick, 19,200 km$^2$ or approximately 34% of the basin's total drainage area, are located within the State of Maine. A small portion of the basin is also located within the province of Quebec. The 120 km reach of the Saint John River from the confluence of the St. Francis River downstream to Grand Falls, New Brunswick, serves as the international boundary between Canada and the United States of America.

In February, 1975, use specific Water Quality Objectives for the international waters of the Saint John River were recommended for 61 parameters and a number of pesticides. These objectives were based on the fishable-swimmable criteria incorporated into legislation in the United States of America and agreed to by the Canada-USA committee in 1975. Hence, they were a combination of Water Quality Objectives for fisheries and contact recreational uses. These objectives were reviewed in 1980 and suggested changes were presented in the report of the International Technical Advisory Subcommittee (ITAS) on Water Quality in the Saint John River (ITAS, 1980). These were finally accepted by the governments of both nations as goals in the water quality management of the International Saint John River Basin.

"Safe and "acute" Water Quality Objectives levels were developed to support the fisheries or aquatic biota. The "safe" level Objective for a given parameter represents the long-term management goal and should, therefore, be compared to the seasonal or annual mean for the monitoring data. The second level, the "acute" or alert level Objective, identifies immediate problems within a single grab sample.

This report presents the analytical results for the samples collected between October 1986 and March 1988 as part of an on-going monitoring program carried out by the Water Quality Branch of Environment Canada in the International Saint John River Basin. The data collected for the eleven sites (Table 1 and Map 1) which make up the network were compared with the Water Quality Objectives for the fourteen parameters listed in Table 2.

Since this program was designed for the comparison of annual means of selected parameters and grab sample values with the established objectives, limited interpretation of data will be attempted. Various operational difficulties will be discussed in terms of the application of data in determining compliance with Water Quality Objectives.

## METHODOLOGY

At each of the eleven sites sampled, as part of the International Saint John River Monitoring Network, water samples were collected for major ions, nutrients and metals following procedures outlined in "Sampling for Water Quality" (Environment Canada, 1983). In addition, three in-situ parameters, water temperature, dissolved oxygen and specific conductance, were measured on site. A separate sample bottle was collected for field pH. This sample was allowed to warm to room temperature prior to measurement in either the field laboratory or motel room.

Dissolved phosphorus and dissolved aluminum samples were prepared by the in-field filtration of an aliquot from each sample. In the case of dissolved phosphorus, a portion of the major ion sample was filtered through a Spectro Grade Gelman glass fibre filter previously rinsed with 2% (by volume) hydrochloric acid. The dissolved aluminum sample was prepared by filtering the sample through a Millipore 0.45 µm membrane previously rinsed with 2% nitric acid.

The sample for extractable metals and dissolved aluminum analysis were preserved with concentrated $HNO_3$ at the rate of 2 ml/L of sample. Total and dissolved phosphorus samples were preserved by the addition of 0.5 mL of 30% sulphuric acid per 50 mL of sample, while mercury samples were preserved by the addition of

3 mL of a concentrated sulphuric acid / 5% (w/v) potassium dichromate solution per 100 millilitres of sample.

Field quality assurance/quality control techniques employed during the sampling of the Saint John River network included the use of field and filtration blanks as well as the collection of sequential triplicates. Field blanks were prepared for extractable metals, total phosphorus and mercury, while filtration blanks were prepared for both dissolved aluminum and phosphorus. Both types of blanks were handled and preserved in the same manner as samples.

At the Water Quality Branch laboratory in Moncton, New Brunswick, analyses were performed using methods as outlined in the "Water Quality Branch Analytical Methods Manual, 1979" (Environment Canada, 1979) and are identified by the parameter codes listed in the "NAQUADAT Dictionary of Parameter Codes, 1980" (Environment Canada, 1988). Upon verification of analytical results, the data were transferred to NAQUADAT (National Water Quality Data Bank). For data manipulation and analysis purposes, results which were reported as less than detection limit were assigned a value 75% smaller than the detection limit to aid in computations as well as to help distinguish graphically detected values from those below detection limit.

## RESULTS AND DISCUSSION

### Objective Compliance of Selected Parameters

The data for each of the parameters examined in this compliance report for the International Saint John River Basin Network (Project Sub I.D. Number 0205) are presented in both tabular and graphical form. The graphs, in the form of box and whisker plots, illustrate the data generated for a particular parameter for each site in the network. A schematic of the box and whisker plot (Figure 1) illustrates the major components of the plots - the minimum, maximum and median values as well as the corresponding inter quartile range.

Because of the small sample size and the fact that the mean value can be significantly affected by a single outlying value, the median values was used to compare the data to the "safe" water quality objective.

### Temperature

Examination of Table 3 and Figure 2 show that none of the sites had water temperatures above the acute objective of 25°C, nor did the median values approach the "safe" objective of 20°C. As pointed out in an earlier compliance report (Lockerbie, 1987a), the frequency of measurement was too low to give a true indication of compliance or non-compliance with recommended temperature objectives.

Dissolved Oxygen

Dissolved oxygen concentrations, provided in Table 3 and Figure 3, were in compliance with the "acute" objective of 5 mg/L. Table 3 and Figure 4 indicate that the median values for dissolved oxygen as percent saturation compiled with the lower and upper "safe" objectives of 80% and 110% saturation respectively.

Although the objectives were met by the median values, individual values at four of the eleven sites were below the lower "safe" objective of 80%. Two values fell below the "safe" objective at the Saint John River at Grand Falls Headpond (74.9% in January 1988, and 65.0% in February 1988), and the Aroostook River at Tinker Dam Forebay (65.0% in January 1988, and 77.7% in February 1988). Single values below the "safe" objective were also observed for the Saint John River at Clair (69.9% in February 1988) and the Meduxnekeag River (74.9% in November 1987).

The low oxygen saturations imply that there is a heavy oxygen demand under the ice due to the high concentrations of organic matter which could be explained as being from point source input or algae decay.

The upper safe objective for dissolved oxygen of 110% saturation was exceeded at seven of the eleven sites. One site, the Meduxnekeag River, had four values in excess of safe objective: 110.2% in October 1986, 121.1% in June 1987, 113.6% in July 1987

and 113.8% in September 1987. Three values exceeding the upper safe objective were observed for the Big Presque Isle Stream site:120.1% in April 1987, 135.8% in June 1987 and 126.8% in July 1987. Two sites had two values each which exceeded the upper safe objective: the Saint John River at Sainte Basile (117.0% in October 1986, and 112.8% in April 1987) and the Limestone Stream (114.8% in October 1986 and 118.1% in June 1987). The remaining three sites, exceeded the upper safe objective once during the period covered by this report: the Saint John River at Edmundston (113.1% in October 1986), the Green River (115.0% in April 1987), and the Aroostook River at Tinker Dam Forebay (143.0% in September 1987).

The super-saturation observed may be the result of aeration due to flow (riffles) as in the case of the Green River and Limestone Stream or photosynthetic oxygen generation as in the case of the Big Presque Isle Stream and the Meduxnekeag River.

pH

Laboratory and field pH values, provided in Table 3 and illustrated in Figures 5 and 6 respectively, indicate that all pH values were in compliance of the "acute" and "safe" objectives established for this parameter. While the median values for both sets of pH values were similar, the range of field values was generally greater than that of the laboratory values. This may be

attributed to the greater variation in technique and equipment used in making field measurements as opposed to that of laboratory measurements.

Phosphorus

Phosphorus is a nutrient which, in excess, can accelerate plant growth, resulting in nuisance conditions which can interfere with some water uses, such as swimming. Indirectly, excess phosphorus levels can also result in lowered dissolved oxygen levels when aquatic plants die and rob oxygen from the water during the decay process.

To prevent nuisance conditions, it is recommended that phosphorus not exceed 0.1 mg/L in floving streams, 0.05 mg/L in streams entering an impoundment, and 0.025 mg/L in an impoundment. From experience, the State of Maine suggests that a level higher than 0.015 mg/L is indicative of a potential problem.

Table 4 and Figure 7 indicate that four sites had the median values for total phosphorus of less than 0.015 mg/L - St. Francis River, Saint John River at Clair, Green River and the Meduxnekeag River. No median values exceeded the safe objective of 0.1 mg/L for floving streams, hovever a single value of 0.110 mg/L vas reported at the Saint John River at Edmundston in July 1987.

The "safe" objective for impoundments of 0.025 mg/L was exceeded at the Aroostook River at Tinker Dam, with a median value for total phosphorus of 0.036 mg/L. Seven of the nine samples exceeded the objective with values ranging from 0.029 to 0.067 mg/L. At the Saint John River at Grand Falls Dam, two samples exceeded the objective slightly, however the median value was below the objective at 0.018 mg/L.

Total dissolved phosphorus is a better indicator of potential eutrophication than total phosphorus since it indicates the portion which is not associated or bound to suspended solids and is available for primary production. During this sampling period non-filterable residue (suspended solids) only exceeded the detection limit on one occasion and, as a result, the concentrations of total and dissolved phosphorus were very similar.

Table 4 and Figure 8 indicate that nine of the eleven sites had median values of below the potential algae bloom concentration of 0.015. The median value of 0.033 mg/L for the Aroostook River at Tinker Dam exceeded the "safe" objective for impoundments of 0.025 mg/L. Six of the eight values exceeded the "safe" objective.

The two sites which exhibited the highest total and dissolved phosphorus values in 1987, the Saint John River at Edmundston and the Aroostook River at Tinker, also had the highest reported values in 1986 (Lockerbie, 1987b).

The Edmundston site, which is collected from the shore, is in the influence of the plume, probably of a sewage outfall, whereas the Aroostook River station is downstream of an intensive agricultural area and the phosphorus input is probably due to fertilizer.

Non-Filterable Residue (NFR)

Table 4 and Figure 9, indicate that none of the samples collected for the period of record of this report exceeded the "safe" objective of 25.0 mg/L. In fact, except for a single value of 11.2 mg/L, all values were below the detection limit of 10 mg/L.

Aluminum

Although aluminum is insoluble in its elemental form at near neutral pH, many toxic aluminum salts are soluble at pH levels above 7 as well as in acidic waters. The "safe" level objective for waters with pH levels above 7 is 0.1 mg/L of total extractable aluminum while the "acute" objective is between 1.0 mg/L and 5.0 mg/L of dissolved aluminum.

According to Table 4 and Figure 10, all median values for extractable aluminum were below the "safe" objective of 0.1 mg/L however seven sites had one or two values which exceeded the objective during the report period. Similarly, the median values for dissolved aluminum were below the "safe" objective, however in

this case no dissolved aluminum values exceeded the objective of 0.1 mg/L.

Copper

Extractable copper values, as illustrated in Table 5 and Figure 12, did not exceed the safe objective of 0.005 mg/L. Further, seven of the eleven sites studied had extractable copper levels which were below the detection limit of 0.002 mg/L.

Lead

The safe objective for extractable lead of 0.005 mg/L was not exceeded during the period of record for this report (Table 5 and Figure 13). Only 2 values were above the detection limit of 0.002 mg/L for all samples collected.

Zinc

The safe objective for extractable zinc of 0.030 mg/L was not exceeded during the period of record for this report (Table 5 and Figure 14). Only one value was reported at or above the detection limit of 0.010 mg/L.

Mercury

Extractable mercury values did not exceed the safe objective for extractable mercury of 0.064 µg/l (Table 5 and Figure 15). Only three values which were at or above the detection limit of 0.020 µg/l.

## QUALITY ASSURANCE/QUALITY CONTROL

As discussed in the field and laboratory procedures section of this report, a number of steps were taken to provide a measure of confidence in the results presented in this report. These included sequential triplicate sampling, the use of distilled water blanks, and filtration blanks. While triplicate sampling provides an indication of sampling technique and analytical precision, the blanks were used to assure that there was no contamination of the sample during preparation, preservation, transport and analysis of samples.

A coefficient of variance range of 10% has been suggested as an acceptable measure of reproducibility among the values of a triplicate sample (Arseneault and Hovell, 1985). It should be noted, however, that triplicate results occurring at or near the detection limit may have acceptable reproducibility and yet have a coefficient of variation many times greater than 10%. Conversely, some sets of triplicates values, such as in the case of pH, may have a much smaller coefficient of variance, and still, not have an acceptable reproducibility. Thus the 10% coefficient of variance is used as a guide only.

Ten sets of triplicate samples were collected and analyzed during the period of time covered by this report. Of the thirteen parameters examined in this report, the in-situ parameters, water temperature, conductance and dissolved oxygen, were excluded from

this discussion since they are not measured in triplicate. As indicated in Table 6, reproducibility of field pH, non-filterable residue, dissolved aluminum and most metal parameters are within the acceptable range.

Total phosphorus values failed to meet the reproducibility criteria for six sets of triplicates. These sets of triplicates were collected at the Grand Falls Headpond Site in January, 1987 and February, 1988, the St. Francis River in April, 1987, the Meduxnekeag River in June, 1987, the Big Presque Isle Stream in September, 1987, and the Green River in January, 1988. Two sets of triplicates for extractable aluminum, one collected at the St. Basile Site in October, 1986 and the other at the Grand Falls Headpond site in January, 1987, also exceeded the 10% coefficient of variance.

As mentioned previously, both these parameters are strongly associated with suspended solids, and sampling reproducibility is difficult when even minute amounts of suspended matter are present.

Two sets of triplicate dissolved phosphorus values failed to meet the 10% variance guide. One set was collected at the St. Basile site in October, 1986, while the other was collected at the Grand Falls Headpond in November, 1987. Since a single value in both sets of triplicate values was much higher than the other two, difficulties in reproductibility were likely the result of filtration using damaged or mis-aligned filters.

One set of laboratory pH values which did not have acceptable reproducibility (i.e., vary by more than 0.3 pH units (Arseneault, 1989)), was collected at the Big Presque Isle Stream in July, 1987. Since the only obvious difference in the handling of the samples in this triplicate set is the date on which the laboratory pH measurements were taken, it is reasonable to suggest that there may have been some change in the sample over time.

The analytical results for both the distilled water field blanks and filtration blanks, are given in Tables 7 and 8, respectively. The values for the metal blanks prepared during the period covered by this report were all below the detection limit with the exception of one zinc value. This positive value was at the detection limit of the analytical method used and was not significant.

Examination of the blank values for dissolved and total phosphorous revealed that, although most values were below detection limit, some generated during June, 1987, showed definite signs of contamination, being 4 to 6 times the detection limit. Phosphorus has been detected previously in the laboratory distilled water supply when the ion-exchange column was nearing the end of its useful service period. This is the most probable source of the contamination.

## CONCLUSIONS

The median values for the parameters examined in this report were in compliance with the "safe" objectives established for the International Saint John River Basin, with the exception of total and dissolved phosphorus at the Aroostook River at Tinker Dam. Individual dissolved oxygen values (% saturation) made numerous excursions below the lower "safe" objective of 80% and above the upper "safe" objective of 110%.

Extractable metals were not only below the "safe" objectives but were generally below the detection limit.

## ACKNOWLEDGEMENTS

The author would like to thank the staff of the Monitoring and Surveys Division, the Analytical Services Division, and the Electronic Data Processing Section of the Water Quality Branch for their efforts in generating and preparing the data in this report. Louise Boulter and Denise Fowler are to be thanked for their patience in typing this report and drafts.

Thanks also goes to Hugh O'Neill and Tom Pollock of the Water Quality Branch for their comments and suggestions in reviewing this report.

## REFERENCES

Arseneault, R., G. Howell, 1985. Field Quality Control/Quality Assurance Program. Results of the 1984/1985 Sequential Triplicate Sampling, IWD-AR-WQB-85-78, Water Quality Branch, Environment Canada, Moncton, N. B.

Environment Canada, 1983. Sampling for Water Quality, Water Quality Branch, Environment Canada, Ottawa.

Environment Canada, 1979. Water Quality Branch Analytical Methods Manual, 1979, Environment Canada, Ottawa.

Environment Canada, 1988. NAQUADAT Dictionary of Parameter Codes, 1988, Environment Canada, Ottawa.

ITAS, 1980. Review and Update of Water Quality Objectives for the International Saint John River Basin, International Technical Advisory Sub-committee on Water Quality in the Saint John River.

Lockerbie, D.M., 1987(a) Compliance of Selected Water Quality Parameters to the Ojbectives of the International Waters of the Saint John River Basin During the Years 1984 and 1985, IW/L-AR-WQB-87-118, Water Quality Branch, Environment Canada, Moncton, N.B.

Lockerbie, D.M., 1987(b) Results of 1986 Water Quality Objectives Compliance Monitoring-International Saint John River Basin, IW/L-AR-WQB-87-131, Water Quality Branch, Environment Canada, Moncton, N.B.

**TABLE 1: INTERNATIONAL SAINT JOHN RIVER SAMPLING STATIONS, 1986-1987**

| SITE No. | STATION NUMBER | LOCATION |
|---|---|---|
| 1 | 00NB01AD0013 | St. Francis River at Picnic Site |
| 2 | 00NB01AD0001 | Saint John River at Clair from Int'l Bridge |
| 3 | 00NB01AD0008 | Saint John River at Edmundston (WSC Gauge) |
| 4 | 00NB01AD0016 | Madavaska River at Power Plant Tailrace |
| 5 | 00NB01AF0038 | Saint John River at Ste. Basile |
| 6 | 00NB01AF0021 | Green River at W.S.C. Gauge |
| 7 | 01NB01AF0005 | Saint John River at Grand Falls Headpond |
| 8 | 00NB01AG0003 | Limestone Stream at Four Falls (WSC Gauge) |
| 9 | 01NB01AG0001 | Aroostook River at Tinker Dam |
| 10 | 00NB01AJ0006 | Big Presque Isle Stream at Tracy Mills (WSC Gauge) |
| 11 | 00NB01AJ0029 | Meduxnekeag River at Bellville |

**TABLE 2: PARAMETERS AND THEIR WATER QUALITY OBJECTIVES**

| NAQUADAT Parameter Code | Parameter Measured | W.Q.Objectives Safe | Acute |
|---|---|---|---|
| 02065S | Water Temperature (C) | 20.0 | 25.0 |
| 08102S | Dissolved Oxygen (mg/L) | | >5.0 |
| 08002S | Dissolved Oxygen (% Sat.) | | <80%> 110% |
| 10301F | pH, Field (units) | 6.0-9.0 | <4.0,> 9.8 |
| 10301L | pH, Laboratory (units) | 6.0-9.0 | <4.0,> 9.8 |
| 13305P | Extractable Aluminum (mg/L) | 0.100 | 1.0 - 5.0 |
| 13106P | Dissolved Aluminum (mg/L) | 0.100 | 1.0 - 5.0 |
| 15413P | Total Phosphorus (mg/L) | 0.100* | 0.015*** |
| | | 0.025** | |
| 15104L | Dissolved Phosphorus (mg/L) | 0.100* | 0.015*** |
| | | 0.025** | |
| 10401L | Non-Filterable Residue (mg/L) | 25.0 | 100 |
| 29305P | Extractable Copper (mg/L) | 0.005 | 0.020 |
| 30304P | Extractable Zinc (mg/L) | 0.030 | 0.080 |
| 82302P | Extractable Lead (mg/L) | 0.005 | 0.030 |
| 80315P | Extractable Mercury (ug/L) | 0.064 | 3.0 |

* Nuisance lever for water in a flowing stream

** Nuisance level for water in an impoundment

*** Indicative of a potential algal bloom

TABLE 3: WATER TEMPERATURE, DISSOLVED OXYGEN, AND pH MEASURMENTS
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | TEMP (C) | D.O. (mg/L) | D.O. (% SAT.) | FIELD pH (UNITS) | LAB pH (UNITS) |
|---|---|---|---|---|---|---|---|---|
| 1 | 00NB01AD0013 | 24-OCT-86 | 1130 | 6.0 | 10.7 | 88.88 | 7.7 | 7.5 |
| | 00NB01AD0013 | 17-DEC-86 | 1215 | 0.0 | 14.3 | 100.98 | 6.4 | 7.6 |
| | 00NB01AD0013 | 27-JAN-87 | 1115 | 0.1 | | | | 7.4 |
| | 00NB01AD0013 | 15-APR-87 | 1000 | 2.5 | 13.2 | 99.86 | 6.7 | 7.5 |
| | 00NB01AD0013 | 09-JUN-87 | 1420 | 16.5 | 9.2 | 98.83 | 7.3 | 7.5 |
| | 00NB01AD0013 | 22-JUL-87 | 1030 | 20.3 | 9.1 | 106.33 | 7.8 | 7.8 |
| | 00NB01AD0013 | 09-SEP-87 | 950 | 18.2 | 8.2 | 91.51 | | 7.6 |
| | 00NB01AD0013 | 25-NOV-87 | 1005 | 4.0 | 11.7 | 92.17 | 8.1 | 7.5 |
| | 00NB01AD0013 | 13-JAN-88 | 1030 | 0.8 | 12.0 | 86.64 | 7.8 | 7.6 |
| | 00NB01AD0013 | 24-FEB-88 | 1030 | 0.0 | 13.0 | 91.80 | 7.7 | 7.5 |
| 2 | 00NB01AD0001 | 25-OCT-86 | 1000 | 3.5 | 12.9 | 100.27 | | 7.3 |
| | 00NB01AD0001 | 17-DEC-86 | 1400 | 0.0 | 14.1 | 99.57 | 6.7 | 6.7 |
| | 00NB01AD0001 | 27-JAN-87 | 1330 | 0.2 | | | | 7.1 |
| | 00NB01AD0001 | 15-APR-87 | 1250 | 4.7 | 12.8 | 102.74 | 6.6 | 7.3 |
| | 00NB01AD0001 | 09-JUN-87 | 1420 | 15.3 | 10.0 | 104.51 | 7.6 | 7.6 |
| | 00NB01AD0001 | 22-JUL-87 | 1130 | 18.9 | 9.5 | 107.67 | 7.7 | 7.6 |
| | 00NB01AD0001 | 09-SEP-87 | 1035 | 18.5 | 8.5 | 95.49 | | 7.6 |
| | 00NB01AD0001 | 25-NOV-87 | 1100 | 0.0 | 13.8 | 97.45 | 8.1 | 7.3 |
| | 00NB01AD0001 | 13-JAN-88 | 1130 | 0.0 | 11.4 | 80.50 | 7.5 | 7.5 |
| | 00NB01AD0001 | 24-FEB-88 | 1150 | 0.0 | 9.9 | 69.91 | 7.3 | 7.1 |
| 3 | 00NB01AD0008 | 25-OCT-86 | 1800 | 5.5 | 13.8 | 113.14 | 7.8 | 7.3 |
| | 00NB01AD0008 | 15-APR-87 | 1345 | 6.8 | 11.8 | 100.09 | 6.3 | 7.1 |
| | 00NB01AD0008 | 09-JUN-87 | 1115 | 16.5 | 9.8 | 105.28 | 7.3 | 7.6 |
| | 00NB01AD0008 | 22-JUL-87 | 1225 | 19.7 | 9.2 | 106.11 | 7.6 | 7.2 |
| | 00NB01AD0008 | 09-SEP-87 | 1130 | 18.8 | 8.0 | 90.47 | | 7.3 |
| | 00NB01AD0008 | 25-NOV-87 | 1300 | 1.0 | 14.6 | 106.00 | 7.8 | 7.2 |
| | 00NB01AD0008 | 13-JAN-88 | 1330 | 0.0 | 12.6 | 88.98 | 7.5 | 7.5 |
| | 00NB01AD0008 | 24-FEB-88 | 1420 | 0.0 | 11.9 | 84.03 | 7.3 | 7.6 |
| 4 | 00NB01AD0016 | 25-OCT-86 | 1745 | 6.5 | | | 7.8 | 7.7 |
| | 00NB01AD0016 | 17-DEC-86 | 1500 | 0.2 | 14.9 | 105.81 | 7.1 | 7.5 |
| | 00NB01AD0016 | 27-JAN-87 | 1445 | 0.5 | | | | 7.6 |
| | 00NB01AD0016 | 14-APR-87 | 1415 | 3.0 | | | 7.1 | 8.0 |
| | 00NB01AD0016 | 09-JUN-87 | 1140 | 14.0 | 9.8 | 99.36 | 7.4 | 7.5 |
| | 00NB01AD0016 | 22-JUL-87 | 1245 | 19.9 | 9.0 | 104.25 | 7.9 | 7.7 |
| | 00NB01AD0016 | 09-SEP-87 | 1140 | 18.2 | 9.0 | 100.44 | | 7.7 |
| | 00NB01AD0016 | 25-NOV-87 | 1240 | 3.2 | 13.4 | 103.31 | 8.0 | 7.9 |
| | 00NB01AD0016 | 13-JAN-88 | 1315 | 0.0 | 12.5 | 88.27 | 7.8 | 7.9 |
| | 00NB01AD0016 | 24-FEB-88 | 1320 | 0.5 | 14.0 | 100.25 | 7.9 | 7.2 |
| 5 | 00NB01AF0038 | 25-OCT-86 | 1500 | 6.5 | 13.9 | 116.98 | 7.8 | 7.5 |
| | 00NB01AF0038 | 27-JAN-87 | 1530 | 0.0 | | | | 7.2 |
| | 00NB01AF0038 | 14-APR-87 | 1245 | 4.3 | 14.2 | 112.77 | 7.2 | 7.4 |
| | 00NB01AF0038 | 09-JUN-87 | 1050 | 16.7 | 8.6 | 92.81 | 7.0 | 7.1 |
| | 00NB01AF0038 | 22-JUL-87 | 1345 | 20.3 | 8.2 | 95.81 | 7.6 | 7.4 |
| | 00NB01AF0038 | 09-SEP-87 | 1245 | 17.8 | 7.9 | 87.39 | | 7.2 |
| | 00NB01AF0038 | 25-NOV-87 | 1325 | 2.0 | 13.6 | 101.49 | 7.7 | 7.3 |
| | 00NB01AF0038 | 13-JAN-88 | 1515 | 0.0 | 14.0 | 98.86 | 7.6 | 7.6 |
| 6 | 00NB01AF0021 | 26-OCT-86 | 910 | 3.0 | 13.6 | 104.29 | 7.8 | 7.6 |

TABLE 3: WATER TEMPERATURE, DISSOLVED OXYGEN, AND pH MEASURMENTS
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | TEMP (C) | D.O. (mg/L) | D.O. (% SAT.) | FIELD pH (UNITS) | LAB pH (UNITS) |
|---|---|---|---|---|---|---|---|---|
| 6 | 00NB01AF0021 | 17-DEC-86 | 1550 | 0.0 | 13.9 | 98.16 | 7.3 | 7.3 |
| | 00NB01AF0021 | 27-JAN-87 | 1615 | 0.0 | | | | 7.5 |
| | 00NB01AF0021 | 14-APR-87 | 1201 | 4.5 | 14.4 | 114.97 | 7.3 | 7.4 |
| | 00NB01AF0021 | 09-JUN-87 | 1020 | 13.9 | 9.8 | 99.13 | 7.2 | 7.7 |
| | 00NB01AF0021 | 22-JUL-87 | 1415 | 19.2 | 9.5 | 108.38 | 8.1 | 7.8 |
| | 00NB01AF0021 | 09-SEP-87 | 1320 | 15.0 | 9.9 | 102.75 | | 7.7 |
| | 00NB01AF0021 | 25-NOV-87 | 1350 | 1.2 | 14.9 | 108.77 | 8.0 | 7.4 |
| | 00NB01AF0021 | 13-JAN-88 | 1600 | 0.0 | 12.6 | 88.98 | 7.6 | 7.8 |
| | 00NB01AF0021 | 24-FEB-88 | 1550 | 0.0 | 11.8 | 83.33 | 7.5 | 7.6 |
| 7 | 01NB01AF0005 | 26-OCT-86 | 1100 | 5.5 | 12.0 | 98.38 | 7.6 | 7.6 |
| | 01NB01AF0005 | 28-JAN-87 | 1150 | 0.0 | | | | 7.2 |
| | 01NB01AF0005 | 14-APR-87 | 1025 | 4.0 | 13.6 | 107.14 | 7.3 | 7.1 |
| | 01NB01AF0005 | 08-JUN-87 | 1600 | 18.0 | 8.7 | 96.66 | 7.0 | 7.6 |
| | 01NB01AF0005 | 22-JUL-87 | 1740 | 21.3 | 7.3 | 87.14 | 7.5 | 7.8 |
| | 01NB01AF0005 | 09-SEP-87 | 1410 | 17.0 | 9.0 | 97.78 | | 7.4 |
| | 01NB01AF0005 | 25-NOV-87 | 1500 | 0.0 | 13.7 | 96.74 | 7.7 | 7.3 |
| | 01NB01AF0005 | 14-JAN-88 | 900 | 0.0 | 10.6 | 74.85 | 7.6 | 7.3 |
| | 01NB01AF0005 | 25-FEB-88 | 1030 | 0.0 | 9.2 | 64.97 | 7.4 | 7.2 |
| 8 | 00NB01AG0003 | 26-OCT-86 | 1430 | 5.5 | 14.0 | 114.78 | 8.5 | 8.2 |
| | 00NB01AG0003 | 16-DEC-86 | 1710 | 0.1 | 13.8 | 97.72 | 7.4 | 8.4 |
| | 00NB01AG0003 | 28-JAN-87 | 1000 | 0.2 | | | | 7.9 |
| | 00NB01AG0003 | 14-APR-87 | 935 | 3.0 | 13.5 | 103.52 | 7.2 | 8.2 |
| | 00NB01AG0003 | 08-JUN-87 | 1535 | 19.0 | 10.4 | 118.13 | 8.3 | 8.4 |
| | 00NB01AG0003 | 22-JUL-87 | 1645 | 20.0 | 8.9 | 103.32 | 8.9 | 7.8 |
| | 00NB01AG0003 | 08-SEP-87 | 1700 | 19.4 | 9.0 | 103.13 | | 8.7 |
| | 00NB01AG0003 | 24-NOV-87 | 1610 | 2.0 | 14.2 | 105.97 | 8.2 | 8.1 |
| | 00NB01AG0003 | 12-JAN-88 | 1730 | 0.0 | 11.8 | 83.33 | 8.0 | 8.2 |
| | 00NB01AG0003 | 23-FEB-88 | 1630 | 0.5 | 13.5 | 96.67 | 8.1 | 8.0 |
| 9 | 01NB01AG0001 | 26-OCT-86 | 1500 | 5.0 | 12.5 | 101.13 | 7.6 | 7.4 |
| | 01NB01AG0001 | 16-DEC-86 | 1637 | 0.1 | 13.0 | 92.06 | 7.4 | 7.2 |
| | 01NB01AG0001 | 28-JAN-87 | 930 | 0.0 | | | | 7.2 |
| | 01NB01AG0001 | 14-APR-87 | 900 | 4.9 | 12.4 | 100.06 | 7.3 | 7.1 |
| | 01NB01AG0001 | 08-JUN-87 | 1500 | 17.0 | 9.6 | 104.30 | 7.1 | 7.6 |
| | 01NB01AG0001 | 22-JUL-87 | 1600 | 22.5 | 8.0 | 97.94 | 8.8 | 7.8 |
| | 01NB01AG0001 | 08-SEP-87 | 1630 | 19.7 | 12.4 | 143.02 | | 8.7 |
| | 01NB01AG0001 | 24-NOV-87 | 1545 | 0.5 | 14.1 | 100.96 | 8.0 | 7.4 |
| | 01NB01AG0001 | 12-JAN-88 | 1630 | 0.0 | 9.2 | 64.97 | 7.6 | 7.5 |
| | 01NB01AG0001 | 23-FEB-88 | 1540 | 0.0 | 11.0 | 77.68 | 7.4 | 7.4 |
| 10 | 00NB01AJ0006 | 27-OCT-86 | 1100 | 0.2 | 14.0 | 99.41 | 8.2 | 8.3 |
| | 00NB01AJ0006 | 16-DEC-86 | 1530 | 0.1 | 14.0 | 99.14 | 7.3 | 8.1 |
| | 00NB01AJ0006 | 26-JAN-87 | 1630 | 6.3 | | | | 7.9 |
| | 00NB01AJ0006 | 13-APR-87 | 1515 | 17.2 | 11.0 | 120.05 | 7.1 | 8.1 |
| | 00NB01AJ0006 | 08-JUN-87 | 1355 | 19.2 | 11.9 | 135.76 | 8.2 | 8.4 |
| | 00NB01AJ0006 | 21-JUL-87 | 1515 | 20.5 | 10.8 | 126.73 | 8.5 | 8.3 |
| | 00NB01AJ0006 | 08-SEP-87 | 1440 | 0.5 | 12.0 | 85.93 | | 8.1 |
| | 00NB01AJ0006 | 24-NOV-87 | 1430 | 0.5 | 15.1 | 108.12 | 8.3 | 8.3 |
| | 00NB01AJ0006 | 12-JAN-88 | 1330 | 0.0 | 12.2 | 86.15 | 7.8 | 8.2 |
| | 00NB01AJ0006 | 23-FEB-88 | 1415 | 0.0 | 13.0 | 91.80 | 7.8 | 8.1 |

TABLE 3: WATER TEMPERATURE, DISSOLVED OXYGEN, AND pH MEASURMENTS
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | TEMP (C) | D.O. (mg/L) | D.O. (% SAT.) | FIELD pH (UNITS) | LAB pH (UNITS) |
|---|---|---|---|---|---|---|---|---|
| 11 | 00NB01AJ0029 | 27-OCT-86 | 1430 | 4.0 | 14.0 | 110.29 | 8.3 | 8.1 |
| | 00NB01AJ0029 | 16-DEC-86 | 1400 | 0.2 | 14.2 | 100.83 | 7.1 | 7.4 |
| | 00NB01AJ0029 | 26-JAN-87 | 1510 | 0.0 | | | | 7.7 |
| | 00NB01AJ0029 | 13-APR-87 | 1410 | 5.1 | 12.2 | 98.97 | 6.6 | 7.8 |
| | 00NB01AJ0029 | 08-JUN-87 | 1201 | 16.0 | 11.4 | 121.08 | 8.5 | 8.2 |
| | 00NB01AJ0029 | 21-JUL-87 | 1345 | 19.0 | 10.0 | 113.59 | 8.4 | 7.9 |
| | 00NB01AJ0029 | 08-SEP-87 | 1348 | 18.2 | 10.2 | 113.83 | | 8.1 |
| | 00NB01AJ0029 | 24-NOV-87 | 1330 | 0.0 | 10.6 | 74.85 | 8.7 | 7.6 |
| | 00NB01AJ0029 | 12-JAN-88 | 1430 | 0.0 | 14.2 | 100.28 | 7.9 | 8.0 |
| | 00NB01AJ0029 | 23-FEB-88 | 1300 | 0.5 | 13.6 | 97.38 | 7.7 | 7.6 |

TABLE 4: PHOSPHORUS, NON-FILTERABLE RESIDUE AND ALUMINUM VALUES
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | TOT. PHOS. (mg/L) | DISS. PHOS. (mg/L) | NFR (mg/L) | EXT. Al (mg/L) | DISS. Al (mg/L) |
|---|---|---|---|---|---|---|---|---|
| 1 | 00NB01AD0013 | 24-OCT-86 | 1130 | 0.006 | 0.003 | L10. | 0.021 | 0.020 |
| | 00NB01AD0013 | 17-DEC-86 | 1215 | 0.002 | | L10. | 0.020 | 0.015 |
| | 00NB01AD0013 | 27-JAN-87 | 1115 | 0.004 | 0.003 | L10. | 0.015 | 0.011 |
| | 00NB01AD0013 | 15-APR-87 | 1000 | 0.015 | 0.009 | L10. | 0.130 | 0.037 |
| | 00NB01AD0013 | 09-JUN-87 | 1420 | 0.010 | 0.003 | L10. | 0.040 | 0.023 |
| | 00NB01AD0013 | 22-JUL-87 | 1030 | 0.012 | 0.006 | L10. | 0.020 | 0.022 |
| | 00NB01AD0013 | 09-SEP-87 | 950 | 0.005 | 0.004 | L10. | 0.018 | L.010 |
| | 00NB01AD0013 | 25-NOV-87 | 1005 | 0.005 | 0.003 | L10. | 0.016 | 0.015 |
| | 00NB01AD0013 | 13-JAN-88 | 1030 | 0.002 | 0.001 | L10. | 0.030 | 0.018 |
| | 00NB01AD0013 | 24-FEB-88 | 1030 | 0.006 | 0.005 | L10. | 0.016 | 0.010 |
| 2 | 00NB01AD0001 | 25-OCT-86 | 1000 | 0.005 | 0.004 | L10. | 0.062 | 0.050 |
| | 00NB01AD0001 | 17-DEC-86 | 1400 | 0.019 | 0.003 | L10. | 0.110 | 0.060 |
| | 00NB01AD0001 | 27-JAN-87 | 1330 | 0.004 | 0.004 | L10. | 0.046 | 0.032 |
| | 00NB01AD0001 | 15-APR-87 | 1250 | 0.011 | 0.007 | L10. | 0.130 | 0.091 |
| | 00NB01AD0001 | 09-JUN-87 | 1420 | 0.011 | 0.005 | L10. | 0.047 | 0.032 |
| | 00NB01AD0001 | 22-JUL-87 | 1130 | 0.007 | 0.006 | L10. | 0.035 | 0.026 |
| | 00NB01AD0001 | 09-SEP-87 | 1035 | 0.007 | 0.006 | L10. | 0.023 | L.010 |
| | 00NB01AD0001 | 25-NOV-87 | 1100 | 0.006 | 0.004 | L10. | 0.063 | 0.050 |
| | 00NB01AD0001 | 13-JAN-88 | 1130 | 0.002 | 0.001 | L10. | 0.040 | 0.030 |
| | 00NB01AD0001 | 24-FEB-88 | 1150 | 0.005 | 0.005 | L10. | 0.040 | 0.028 |
| 3 | 00NB01AD0008 | 25-OCT-86 | 1800 | 0.031 | 0.025 | L10. | 0.053 | 0.038 |
| | 00NB01AD0008 | 15-APR-87 | 1345 | 0.017 | 0.011 | L10. | 0.130 | 0.076 |
| | 00NB01AD0008 | 09-JUN-87 | 1115 | 0.080 | 0.053 | L10. | 0.045 | 0.029 |
| | 00NB01AD0008 | 22-JUL-87 | 1225 | 0.110 | 0.090 | L10. | 0.037 | 0.028 |
| | 00NB01AD0008 | 09-SEP-87 | 1130 | 0.066 | 0.050 | L10. | 0.100 | L.010 |
| | 00NB01AD0008 | 25-NOV-87 | 1300 | 0.060 | 0.052 | L10. | 0.053 | 0.038 |
| | 00NB01AD0008 | 13-JAN-88 | 1330 | 0.004 | 0.004 | L10. | 0.038 | 0.025 |
| | 00NB01AD0008 | 24-FEB-88 | 1420 | 0.015 | 0.011 | L10. | 0.026 | L.010 |
| 4 | 00NB01AD0016 | 25-OCT-86 | 1745 | 0.014 | 0.010 | L10. | 0.017 | L.01 |
| | 00NB01AD0016 | 17-DEC-86 | 1500 | 0.012 | 0.008 | L10. | 0.020 | L.010 |
| | 00NB01AD0016 | 27-JAN-87 | 1445 | 0.019 | 0.009 | L10. | L.010 | L.010 |
| | 00NB01AD0016 | 14-APR-87 | 1415 | 0.013 | 0.006 | L10. | 0.056 | L.010 |
| | 00NB01AD0016 | 09-JUN-87 | 1140 | 0.027 | 0.011 | L10. | 0.090 | 0.013 |
| | 00NB01AD0016 | 22-JUL-87 | 1245 | 0.020 | 0.011 | L10. | 0.037 | L.010 |
| | 00NB01AD0016 | 09-SEP-87 | 1140 | 0.024 | 0.011 | L10. | 0.052 | L.010 |
| | 00NB01AD0016 | 25-NOV-87 | 1240 | 0.009 | 0.005 | L10. | L.010 | L.010 |
| | 00NB01AD0016 | 13-JAN-88 | 1315 | 0.009 | 0.006 | L10. | 0.020 | L.010 |
| | 00NB01AD0016 | 24-FEB-88 | 1320 | 0.052 | 0.047 | L10. | 0.042 | 0.028 |
| 5 | 00NB01AF0038 | 25-OCT-86 | 1500 | 0.033 | 0.015 | L10. | 0.110 | 0.037 |
| | 00NB01AF0038 | 27-JAN-87 | 1530 | 0.028 | 0.014 | L10. | 0.054 | 0.029 |
| | 00NB01AF0038 | 14-APR-87 | 1245 | 0.016 | 0.008 | L10. | 0.095 | 0.045 |
| | 00NB01AF0038 | 09-JUN-87 | 1050 | 0.037 | 0.016 | L10. | 0.080 | 0.045 |
| | 00NB01AF0038 | 22-JUL-87 | 1345 | 0.034 | 0.023 | L10. | 0.075 | 0.035 |
| | 00NB01AF0038 | 09-SEP-87 | 1245 | 0.048 | 0.023 | L10. | 0.085 | 0.042 |
| | 00NB01AF0038 | 25-NOV-87 | 1325 | 0.023 | 0.005 | L10. | 0.040 | 0.040 |
| | 00NB01AF0038 | 13-JAN-88 | 1515 | 0.020 | 0.012 | L10. | 0.048 | 0.030 |
| 6 | 00NB01AF0021 | 26-OCT-86 | 910 | 0.003 | 0.002 | L10. | 0.028 | L.01 |

TABLE 4: PHOSPHORUS, NON-FILTERABLE RESIDUE AND ALUMINUM VALUES
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | TOT. PHOS. (mg/L) | DISS. PHOS. (mg/L) | NFR (mg/L) | EXT. Al (mg/L) | DISS. Al (mg/L) |
|---|---|---|---|---|---|---|---|---|
| 6 | 00NB01AF0021 | 17-DEC-86 | 1550 | 0.002 | L.001 | L10. | 0.015 | L.010 |
| | 00NB01AF0021 | 27-JAN-87 | 1615 | L.001 | L.001 | L10. | L.010 | L.010 |
| | 00NB01AF0021 | 14-APR-87 | 1201 | 0.011 | 0.004 | L10. | 0.050 | L.010 |
| | 00NB01AF0021 | 09-JUN-87 | 1020 | 0.008 | 0.005 | L10. | 0.035 | L.010 |
| | 00NB01AF0021 | 22-JUL-87 | 1415 | 0.011 | 0.007 | L10. | 0.092 | L.010 |
| | 00NB01AF0021 | 09-SEP-87 | 1320 | 0.005 | 0.003 | L10. | 0.029 | L.010 |
| | 00NB01AF0021 | 25-NOV-87 | 1350 | 0.003 | 0.001 | L10. | 0.010 | L.010 |
| | 00NB01AF0021 | 13-JAN-88 | 1600 | 0.004 | 0.001 | L10. | L.010 | L.010 |
| | 00NB01AF0021 | 24-FEB-88 | 1550 | 0.001 | L.001 | L10. | L.010 | L.010 |
| 7 | 01NB01AF0005 | 26-OCT-86 | 1100 | 0.014 | 0.006 | L10. | 0.062 | 0.027 |
| | 01NB01AF0005 | 28-JAN-87 | 1150 | 0.018 | 0.006 | L10. | 0.037 | 0.026 |
| | 01NB01AF0005 | 14-APR-87 | 1025 | 0.018 | 0.008 | 11.2 | 0.170 | 0.062 |
| | 01NB01AF0005 | 08-JUN-87 | 1600 | 0.020 | 0.014 | L10. | 0.090 | 0.035 |
| | 01NB01AF0005 | 22-JUL-87 | 1740 | 0.028 | 0.011 | L10. | 0.062 | 0.025 |
| | 01NB01AF0005 | 09-SEP-87 | 1410 | 0.033 | 0.011 | L10. | 0.044 | L.010 |
| | 01NB01AF0005 | 25-NOV-87 | 1500 | 0.014 | 0.005 | L10. | 0.058 | 0.040 |
| | 01NB01AF0005 | 14-JAN-88 | 900 | 0.008 | 0.003 | L10. | 0.035 | 0.028 |
| | 01NB01AF0005 | 25-FEB-88 | 1030 | 0.025 | 0.014 | L10. | 0.046 | 0.030 |
| 8 | 00NB01AG0003 | 26-OCT-86 | 1430 | 0.015 | 0.005 | L10. | 0.045 | 0.014 |
| | 00NB01AG0003 | 16-DEC-86 | 1710 | 0.027 | 0.011 | L10. | 0.043 | 0.012 |
| | 00NB01AG0003 | 28-JAN-87 | 1000 | 0.035 | 0.028 | L10. | 0.012 | L.010 |
| | 00NB01AG0003 | 14-APR-87 | 935 | 0.027 | 0.017 | L10. | 0.075 | 0.018 |
| | 00NB01AG0003 | 08-JUN-87 | 1535 | 0.035 | 0.014 | L10. | 0.050 | 0.023 |
| | 00NB01AG0003 | 22-JUL-87 | 1645 | 0.026 | 0.022 | L10. | 0.042 | 0.022 |
| | 00NB01AG0003 | 08-SEP-87 | 1700 | 0.011 | 0.008 | L10. | 0.019 | 0.014 |
| | 00NB01AG0003 | 24-NOV-87 | 1610 | 0.022 | 0.010 | L10. | 0.033 | 0.013 |
| | 00NB01AG0003 | 12-JAN-88 | 1730 | | | L10. | 0.040 | 0.010 |
| | 00NB01AG0003 | 23-FEB-88 | 1630 | 0.025 | 0.024 | L10. | 0.018 | L.010 |
| 9 | 01NB01AG0001 | 26-OCT-86 | 1500 | 0.036 | 0.031 | L10. | 0.040 | 0.022 |
| | 01NB01AG0001 | 16-DEC-86 | 1637 | 0.029 | 0.034 | L10. | 0.058 | 0.040 |
| | 01NB01AG0001 | 28-JAN-87 | 930 | 0.050 | 0.037 | L10. | 0.024 | 0.022 |
| | 01NB01AG0001 | 14-APR-87 | 900 | 0.018 | 0.012 | L10. | 0.110 | 0.076 |
| | 01NB01AG0001 | 08-JUN-87 | 1500 | 0.011 | | L10. | 0.100 | 0.042 |
| | 01NB01AG0001 | 22-JUL-87 | 1600 | 0.029 | 0.019 | L10. | 0.042 | 0.030 |
| | 01NB01AG0001 | 08-SEP-87 | 1630 | 0.067 | 0.038 | L10. | 0.055 | 0.040 |
| | 01NB01AG0001 | 24-NOV-87 | 1545 | 0.037 | 0.028 | L10. | 0.045 | 0.028 |
| | 01NB01AG0001 | 12-JAN-88 | 1630 | | | L10. | 0.035 | 0.025 |
| | 01NB01AG0001 | 23-FEB-88 | 1540 | 0.037 | 0.033 | L10. | 0.020 | 0.012 |
| 10 | 00NB01AJ0006 | 27-OCT-86 | 1100 | 0.004 | 0.004 | L10. | L.01 | L.01 |
| | 00NB01AJ0006 | 16-DEC-86 | 1530 | 0.018 | | L10. | 0.013 | L.010 |
| | 00NB01AJ0006 | 26-JAN-87 | 1630 | 0.018 | 0.015 | L10. | L.010 | L.010 |
| | 00NB01AJ0006 | 13-APR-87 | 1515 | 0.018 | 0.010 | L10. | 0.047 | 0.015 |
| | 00NB01AJ0006 | 08-JUN-87 | 1355 | 0.017 | 0.011 | L10. | 0.020 | L.010 |
| | 00NB01AJ0006 | 21-JUL-87 | 1515 | 0.018 | 0.012 | L10. | 0.010 | L.010 |
| | 00NB01AJ0006 | 08-SEP-87 | 1440 | 0.007 | 0.008 | L10. | 0.015 | L.010 |
| | 00NB01AJ0006 | 24-NOV-87 | 1430 | 0.006 | 0.002 | L10. | 0.130 | L.010 |
| | 00NB01AJ0006 | 12-JAN-88 | 1330 | 0.009 | 0.007 | L10. | 0.013 | L.010 |
| | 00NB01AJ0006 | 23-FEB-88 | 1415 | 0.016 | 0.014 | L10. | L.010 | L.010 |

TABLE 4: PHOSPHORUS, NON-FILTERABLE RESIDUE AND ALUMINUM VALUES
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | TOT. PHOS. (mg/L) | DISS. PHOS. (mg/L) | NFR (mg/L) | EXT. Al (mg/L) | DISS. Al (mg/L) |
|---|---|---|---|---|---|---|---|---|
| 11 | 00NB01AJ0029 | 27-OCT-86 | 1430 | 0.008 | 0.007 | L10. | 0.015 | L.01 |
| | 00NB01AJ0029 | 16-DEC-86 | 1400 | 0.012 | 0.007 | L10. | 0.041 | 0.023 |
| | 00NB01AJ0029 | 26-JAN-87 | 1510 | 0.025 | 0.012 | L10. | 0.011 | L.010 |
| | 00NB01AJ0029 | 13-APR-87 | 1410 | 0.011 | 0.007 | L10. | 0.066 | 0.035 |
| | 00NB01AJ0029 | 08-JUN-87 | 1201 | 0.011 | 0.005 | L10. | 0.015 | 0.011 |
| | 00NB01AJ0029 | 21-JUL-87 | 1345 | 0.014 | 0.014 | L10. | 0.010 | 0.010 |
| | 00NB01AJ0029 | 08-SEP-87 | 1348 | 0.007 | 0.007 | L10. | 0.019 | L.010 |
| | 00NB01AJ0029 | 24-NOV-87 | 1330 | 0.026 | 0.006 | L10. | 0.033 | 0.019 |
| | 00NB01AJ0029 | 12-JAN-88 | 1430 | 0.016 | 0.014 | L10. | 0.023 | 0.015 |
| | 00NB01AJ0029 | 23-FEB-88 | 1300 | 0.019 | 0.016 | L10. | 0.015 | L.010 |

TABLE 5: EXTRACTABLE COPPER, LEAD, ZINC, AND MERCURY VALUES
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | EXT. Cu (mg/L) | EXT. Pb (mg/L) | EXT. Zn (mg/L) | EXT. Hg (ug/L) |
|---|---|---|---|---|---|---|---|
| 1 | 00NB01AD0013 | 24-OCT-86 | 1130 | L.002 | L.002 | L.01 | 0.05 |
| | 00NB01AD0013 | 17-DEC-86 | 1215 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 27-JAN-87 | 1115 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 15-APR-87 | 1000 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 09-JUN-87 | 1420 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 22-JUL-87 | 1030 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 09-SEP-87 | 950 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 25-NOV-87 | 1005 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 13-JAN-88 | 1030 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0013 | 24-FEB-88 | 1030 | L.002 | L.002 | L.01 | L.02 |
| 2 | 00NB01AD0001 | 25-OCT-86 | 1000 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 17-DEC-86 | 1400 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 27-JAN-87 | 1330 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 15-APR-87 | 1250 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 09-JUN-87 | 1420 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 22-JUL-87 | 1130 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 09-SEP-87 | 1035 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 25-NOV-87 | 1100 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 13-JAN-88 | 1130 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0001 | 24-FEB-88 | 1150 | 0.002 | L.002 | L.01 | L.02 |
| 3 | 00NB01AD0008 | 25-OCT-86 | 1800 | 0.004 | L.002 | L.01 | L.02 |
| | 00NB01AD0008 | 15-APR-87 | 1345 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0008 | 09-JUN-87 | 1115 | 0.002 | L.002 | L.01 | 0.03 |
| | 00NB01AD0008 | 22-JUL-87 | 1225 | 0.003 | L.002 | L.01 | L.02 |
| | 00NB01AD0008 | 09-SEP-87 | 1130 | 0.002 | 0.002 | L.01 | L.02 |
| | 00NB01AD0008 | 25-NOV-87 | 1300 | 0.003 | L.002 | L.01 | L.02 |
| | 00NB01AD0008 | 13-JAN-88 | 1330 | 0.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0008 | 24-FEB-88 | 1420 | L.002 | L.002 | L.01 | L.02 |
| 4 | 00NB01AD0016 | 25-OCT-86 | 1745 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 17-DEC-86 | 1500 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 27-JAN-87 | 1445 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 14-APR-87 | 1415 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 09-JUN-87 | 1140 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 22-JUL-87 | 1245 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 09-SEP-87 | 1140 | L.002 | L.002 | 0.01 | L.02 |
| | 00NB01AD0016 | 25-NOV-87 | 1240 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 13-JAN-69 | 1315 | 0.002 | L.002 | L.01 | L.02 |
| | 00NB01AD0016 | 24-FEB-88 | 1320 | 0.003 | L.002 | L.01 | L.02 |
| 5 | 00NB01AF0038 | 25-OCT-86 | 1500 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 27-JAN-87 | 1530 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 14-APR-87 | 1245 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 09-JUN-87 | 1050 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 22-JUL-87 | 1345 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 09-SEP-87 | 1245 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 25-NOV-87 | 1325 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0038 | 13-JAN-88 | 1515 | L.002 | L.002 | L.01 | L.02 |
| 6 | 00NB01AF0021 | 26-OCT-86 | 910 | L.002 | 0.004 | L.01 | L.02 |

TABLE 5: EXTRACTABLE COPPER, LEAD, ZINC, AND MERCURY VALUES
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | EXT. Cu (mg/L) | EXT. Pb (mg/L) | EXT. Zn (mg/L) | EXT. Hg (ug/L) |
|---|---|---|---|---|---|---|---|
| 6 | 00NB01AF0021 | 17-DEC-86 | 1550 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 27-JAN-87 | 1615 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 14-APR-87 | 1201 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 09-JUN-87 | 1020 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 22-JUL-87 | 1415 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 09-SEP-87 | 1320 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 25-NOV-87 | 1350 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 13-JAN-88 | 1600 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AF0021 | 24-FEB-88 | 1550 | L.002 | L.002 | L.01 | L.02 |
| 7 | 01NB01AF0005 | 26-OCT-86 | 1100 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 28-JAN-87 | 1150 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 14-APR-87 | 1025 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 08-JUN-87 | 1600 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 22-JUL-87 | 1740 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 09-SEP-87 | 1410 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 25-NOV-87 | 1500 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 14-JAN-88 | 900 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AF0005 | 25-FEB-88 | 1030 | L.002 | L.002 | L.01 | L.02 |
| 8 | 00NB01AG0003 | 26-OCT-86 | 1430 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 16-DEC-86 | 1710 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 28-JAN-87 | 1000 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 14-APR-87 | 935 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 08-JUN-87 | 1535 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 22-JUL-87 | 1645 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 08-SEP-87 | 1700 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 24-NOV-87 | 1610 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 12-JAN-88 | 1730 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AG0003 | 23-FEB-88 | 1630 | L.002 | L.002 | L.01 | L.02 |
| 9 | 01NB01AG0001 | 26-OCT-86 | 1500 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 16-DEC-86 | 1637 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 28-JAN-87 | 930 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 14-APR-87 | 900 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 08-JUN-87 | 1500 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 22-JUL-87 | 1600 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 08-SEP-87 | 1630 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 24-NOV-87 | 1545 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 12-JAN-88 | 1630 | L.002 | L.002 | L.01 | L.02 |
| | 01NB01AG0001 | 23-FEB-88 | 1540 | 0.002 | L.002 | L.01 | L.02 |
| 10 | 00NB01AJ0006 | 27-OCT-86 | 1100 | L.002 | L.002 | L.01 | 0.02 |
| | 00NB01AJ0006 | 16-DEC-86 | 1530 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 26-JAN-87 | 1630 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 13-APR-87 | 1515 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 08-JUN-87 | 1355 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 21-JUL-87 | 1515 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 08-SEP-87 | 1440 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 24-NOV-87 | 1430 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 12-JAN-88 | 1330 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0006 | 23-FEB-88 | 1415 | L.002 | L.002 | L.01 | L.02 |

TABLE 5: EXTRACTABLE COPPER, LEAD, ZINC, AND MERCURY VALUES
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| SITE NO. | STATION NUMBER | SAMPLE DATE | SAMPLE TIME | EXT. Cu (mg/L) | EXT. Pb (mg/L) | EXT. Zn (mg/L) | EXT. Hg (ug/L) |
|---|---|---|---|---|---|---|---|
| 11 | 00NB01AJ0029 | 27-OCT-86 | 1430 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 16-DEC-86 | 1400 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 26-JAN-87 | 1510 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 13-APR-87 | 1410 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 08-JUN-87 | 1201 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 21-JUL-87 | 1345 | L.002 | L.002 | L.08 | L.02 |
| | 00NB01AJ0029 | 08-SEP-87 | 1348 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 24-NOV-87 | 1330 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 12-JAN-88 | 1430 | L.002 | L.002 | L.01 | L.02 |
| | 00NB01AJ0029 | 23-FEB-88 | 1300 | L.002 | L.002 | L.01 | L.02 |

TABLE 6: SEQUENTIAL TRIPLICATE SAMPLE RESULTS FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN OCTOBER, 1986 TO MARCH, 1988

| STATION NUMBER | SAMPLE DATE | SAMPLE TIME | FIELD pH | LAB pH | EXT. Al mg/L | DISS. Al mg/L | TOT. PHOS. mg/L | DISS. PHOS. mg/L |
|---|---|---|---|---|---|---|---|---|
| 00NB01AF0038 | 25-OCT-86 | 1500 | 7.8 | 7.5 | 0.110 | 0.037 | 0.033 | 0.015 |
| 00NB01AF0038 | 25-OCT-86 | 1505 | 7.8 | 7.5 | 0.090 | 0.040 | 0.033 | 0.021 |
| 00NB01AF0038 | 25-OCT-86 | 1510 | 7.8 | 7.5 | 0.120 | 0.037 | 0.033 | 0.013 |
| 00NB01AF0021 | 17-DEC-86 | 1550 | 7.3 | 7.3 | 0.015 | L.010 | 0.003 | L.001 |
| 00NB01AF0021 | 17-DEC-86 | 1554 | 7.3 | 7.3 | 0.015 | L.010 | 0.002 | 0.001 |
| 00NB01AF0021 | 17-DEC-86 | 1558 | 7.3 | 7.3 | 0.014 | L.010 | 0.002 | L.001 |
| 01NB01AF0005 | 28-JAN-87 | 1150 | | 7.2 | 0.037 | 0.024 | 0.024 | 0.006 |
| 01NB01AF0005 | 28-JAN-87 | 1151 | | 7.2 | 0.033 | 0.027 | 0.017 | 0.006 |
| 01NB01AF0005 | 28-JAN-87 | 1152 | | 7.1 | 0.044 | 0.026 | 0.018 | 0.007 |
| 00NB01AD0013 | 15-APR-87 | 1000 | 6.7 | 7.5 | 0.130 | 0.035 | 0.014 | 0.009 |
| 00NB01AD0013 | 15-APR-87 | 1005 | 6.7 | 7.5 | 0.130 | 0.039 | 0.015 | 0.010 |
| 00NB01AD0013 | 15-APR-87 | 1010 | 6.7 | 7.2 | 0.140 | 0.037 | 0.018 | 0.008 |
| 00NB01AJ0029 | 08-JUN-87 | 1201 | 8.5 | 8.1 | 0.015 | 0.010 | 0.011 | 0.005 |
| 00NB01AJ0029 | 08-JUN-87 | 1205 | 8.5 | 8.2 | 0.015 | 0.012 | 0.009 | 0.005 |
| 00NB01AJ0029 | 08-JUN-87 | 1210 | 8.5 | 8.2 | 0.015 | 0.011 | 0.011 | 0.005 |
| 00NB01AJ0006 | 21-JUL-87 | 1515 | 8.5 | 8.4 | 0.010 | L.010 | 0.018 | 0.013 |
| 00NB01AJ0006 | 21-JUL-87 | 1517 | 8.5 | 7.9 | 0.010 | L.010 | 0.016 | 0.012 |
| 00NB01AJ0006 | 21-JUL-87 | 1519 | 8.5 | 8.3 | 0.010 | L.010 | 0.018 | 0.011 |
| 00NB01AJ0006 | 08-SEP-87 | 1440 | | 8.1 | 0.015 | L.010 | 0.007 | 0.007 |
| 00NB01AJ0006 | 08-SEP-87 | 1445 | | 8.1 | 0.015 | L.010 | 0.005 | |
| 00NB01AJ0006 | 08-SEP-87 | 1450 | | 8.1 | 0.015 | L.010 | 0.012 | 0.008 |
| 01NB01AF0005 | 25-NOV-87 | 1500 | 7.7 | 7.3 | 0.055 | 0.045 | 0.014 | 0.005 |
| 01NB01AF0005 | 25-NOV-87 | 1505 | 7.7 | 7.5 | 0.058 | 0.038 | 0.014 | 0.014 |
| 01NB01AF0005 | 25-NOV-87 | 1510 | 7.6 | 7.2 | 0.058 | 0.040 | 0.012 | 0.005 |
| 00NB01AF0021 | 13-JAN-88 | 1600 | 7.7 | 7.8 | L.010 | L.010 | 0.002 | 0.001 |
| 00NB01AF0021 | 13-JAN-88 | 1605 | 7.6 | 7.8 | L.010 | L.010 | 0.004 | 0.001 |
| 00NB01AF0021 | 13-JAN-88 | 1610 | 7.6 | 7.8 | L.010 | L.010 | 0.005 | L.001 |
| 01NB01AF0005 | 25-FEB-88 | 1030 | 7.4 | 7.2 | 0.046 | 0.030 | 0.030 | 0.014 |
| 01NB01AF0005 | 25-FEB-88 | 1035 | 7.4 | 7.2 | 0.048 | 0.032 | 0.025 | 0.014 |
| 01NB01AF0005 | 25-FEB-88 | 1040 | 7.4 | 7.2 | 0.046 | 0.030 | 0.024 | 0.014 |

TABLE 6: SEQUENTIAL TRIPLICATE SAMPLE RESULTS FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN OCTOBER, 1986 TO MARCH, 1988

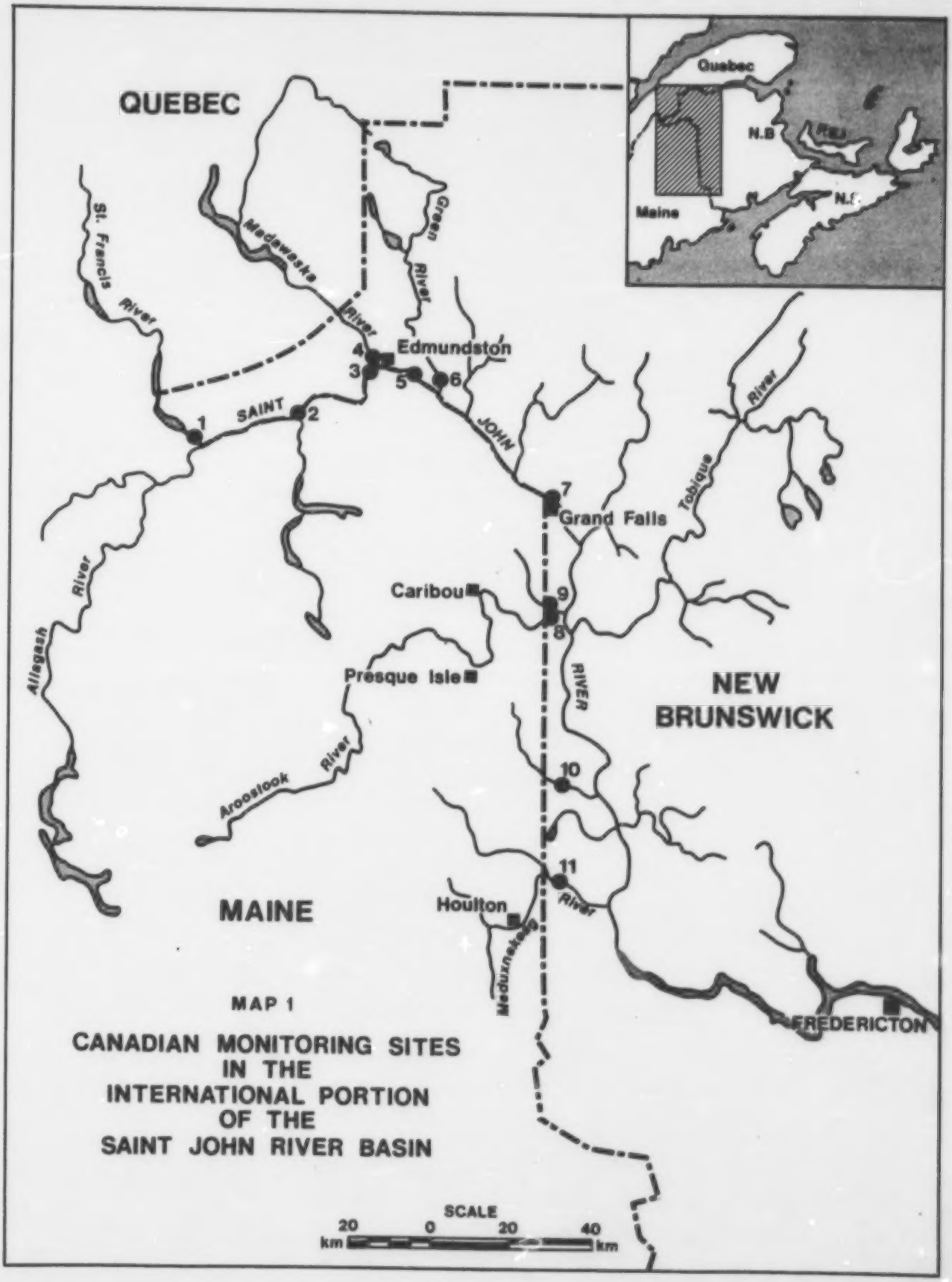
| STATION NUMBER | SAMPLE DATE | SAMPLE TIME | NON-FILT. RES. mg/L | EXT. Cu mg/L | EXT. Zn mg/L | EXT. Pb mg/L | EXT. Hg ug/L |
|---|---|---|---|---|---|---|---|
| 00NB01AF0038 | 25-OCT-86 | 1500 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0038 | 25-OCT-86 | 1505 | | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0038 | 25-OCT-86 | 1510 | | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0021 | 17-DEC-86 | 1550 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0021 | 17-DEC-86 | 1554 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0021 | 17-DEC-86 | 1558 | L10. | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 28-JAN-87 | 1150 | L10. | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 28-JAN-87 | 1151 | L10. | L.002 | 0.01 | L.002 | L.02 |
| 01NB01AF0005 | 28-JAN-87 | 1152 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AD0013 | 15-APR-87 | 1000 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AD0013 | 15-APR-87 | 1005 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AD0013 | 15-APR-87 | 1010 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0029 | 08-JUN-87 | 1201 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0029 | 08-JUN-87 | 1205 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0029 | 08-JUN-87 | 1210 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0006 | 21-JUL-87 | 1515 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0006 | 21-JUL-87 | 1517 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0006 | 21-JUL-87 | 1519 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0006 | 08-SEP-87 | 1440 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0006 | 08-SEP-87 | 1445 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AJ0006 | 08-SEP-87 | 1450 | L10. | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 25-NOV-87 | 1500 | L10. | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 25-NOV-87 | 1505 | L10. | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 25-NOV-87 | 1510 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0021 | 13-JAN-88 | 1600 | L10. | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0021 | 13-JAN-88 | 1605 | | L.002 | L.01 | L.002 | L.02 |
| 00NB01AF0021 | 13-JAN-88 | 1610 | | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 25-FEB-88 | 1030 | L10. | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 25-FEB-88 | 1035 | | L.002 | L.01 | L.002 | L.02 |
| 01NB01AF0005 | 25-FEB-88 | 1040 | | 0.002 | L.01 | L.002 | L.02 |

TABLE 7: RESULTS OF FIELD BLANK ANALYSIS FOR EXTRACTABLE METALS
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| STATION NUMBER | SAMPLE NUMBER | SAMPLE DATE | EXT. Al (mg/L) | DISS. Al (mg/L) | EXT. Cu (mg/L) | EXT. Pb (mg/L) | EXT. Zn (mg/L) | EXT. Hg (ug/L) |
|---|---|---|---|---|---|---|---|---|
| 00NB01AJ9929 | 602434 | 27-OCT-86 | L.01 | L.01 | L.002 | L.002 | L.01 | L.02 |
| 00NB01AJ9929 | 602435 | 27-OCT-86 | L.01 | L.01 | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 602731 | 18-DEC-86 | L.010 | L.010 | L.002 | L.002 | L.01 | L.02 |
| 00NB01AF9905 | 602986 | 27-JAN-87 | L.010 | L.010 | L.002 | L.002 | 0.01 | L.02 |
| 00NB01AF9905 | 602987 | 28-JAN-87 | L.010 | | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 700242 | 14-APR-87 | L.010 | L.010 | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 700243 | 15-APR-87 | L.010 | L.010 | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 700871 | 08-JUN-87 | L.01 | | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 700872 | 09-JUN-87 | L.01 | | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 700873 | 10-JUN-87 | | L.010 | | | | |
| 01NB01AF9905 | 701737 | 21-JUL-87 | L.010 | | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 701738 | 22-JUL-87 | L.010 | L.010 | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 702494 | 09-SEP-87 | L.010 | L.010 | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 703609 | 25-NOV-87 | | | | | | L.02 |
| 01NB01AF9905 | 703608 | 25-NOV-87 | L.010 | | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 704065 | 14-JAN-88 | L.010 | | L.002 | L.002 | L.01 | L.02 |
| 01NB01AF9905 | 704381 | 25-FEB-88 | L.010 | | L.002 | L.002 | L.01 | L.02 |

TABLE 8: RESULTS OF FIELD BLANK ANALYSIS FOR DISSOLVED AND TOTAL PHOSPHORUS
FOR THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK
OCTOBER, 1986 TO MARCH, 1988

| STATION NUMBER | SAMPLE NUMBER | SAMPLE DATE | DISS. PHOS. (mg/L) | TOT. PHOS. (mg/L) |
|---|---|---|---|---|
| 00NB01AF9905 | 602986 | 27-JAN-87 | L.001 | L.001 |
| 00NB01AF9905 | 602987 | 28-JAN-87 | | L.001 |
| 00NB01AJ9929 | 602434 | 27-OCT-86 | L.001 | L.001 |
| 00NB01AJ9929 | 602435 | 27-OCT-86 | 0.001 | L.001 |
| 01NB01AF9905 | 602731 | 18-DEC-86 | | L.001 |
| 01NB01AF9905 | 700242 | 14-APR-87 | L.001 | 0.001 |
| 01NB01AF9905 | 700243 | 15-APR-87 | L.001 | L.001 |
| 01NB01AF9905 | 700871 | 08-JUN-87 | | 0.006 |
| 01NB01AF9905 | 700872 | 09-JUN-87 | | 0.004 |
| 01NB01AF9905 | 700873 | 10-JUN-87 | 0.002 | |
| 01NB01AF9905 | 701737 | 21-JUL-87 | | L.001 |
| 01NB01AF9905 | 701738 | 22-JUL-87 | L.001 | L.001 |
| 01NB01AF9905 | 702494 | 09-SEP-87 | L.001 | L.001 |
| 01NB01AF9905 | 703608 | 25-NOV-87 | | 0.001 |
| 01NB01AF9905 | 704065 | 14-JAN-88 | | L.001 |
| 01NB01AF9905 | 704381 | 25-FEB-88 | | L.001 |




MAP 1

CANADIAN MONITORING SITES
IN THE
INTERNATIONAL PORTION
OF THE
SAINT JOHN RIVER BASIN

FIGURE 1: MAJOR COMPONENTS OF A BOX AND WHISKER PLOT

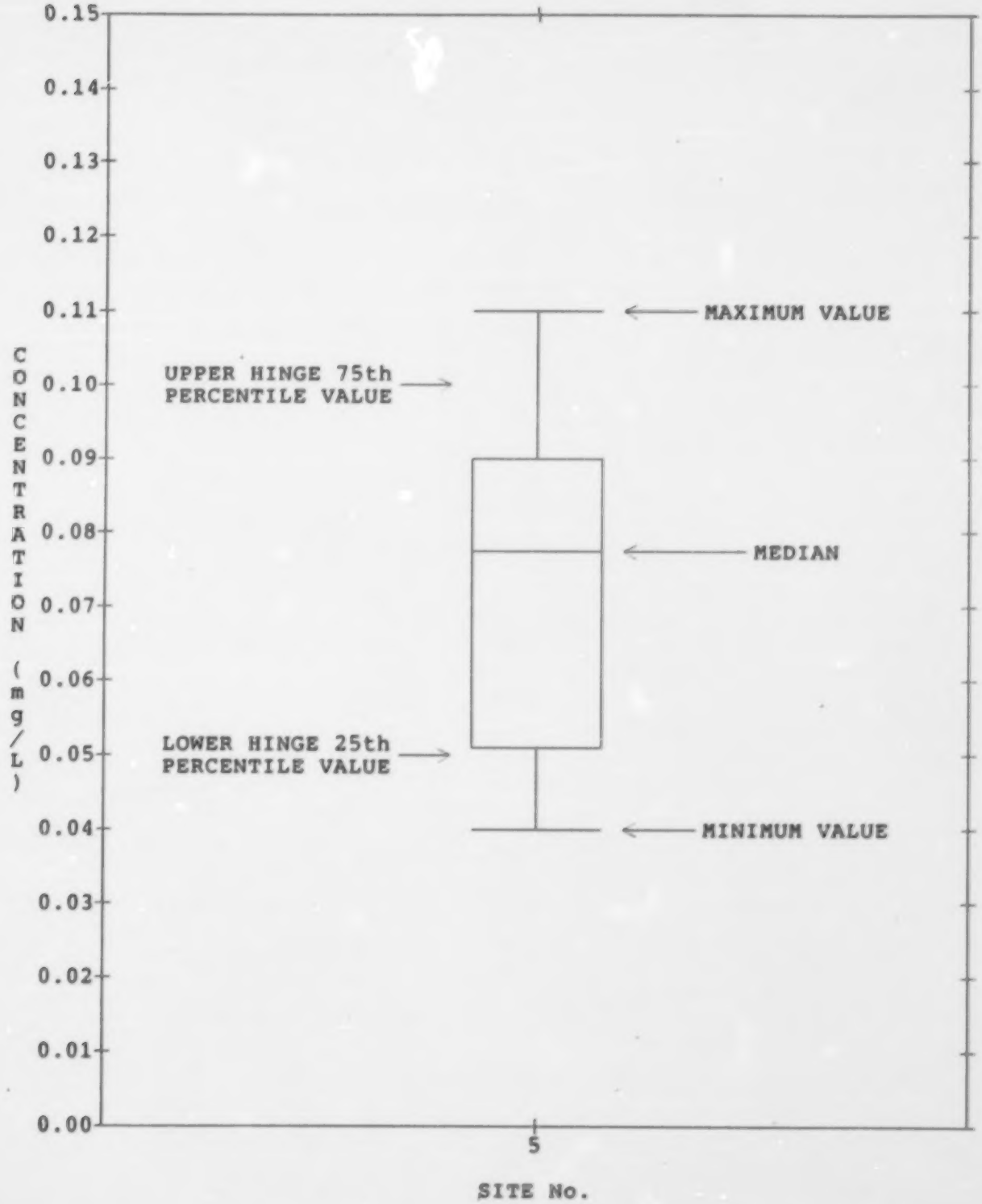


FIGURE 2: WATER TEMPERATURE (C) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

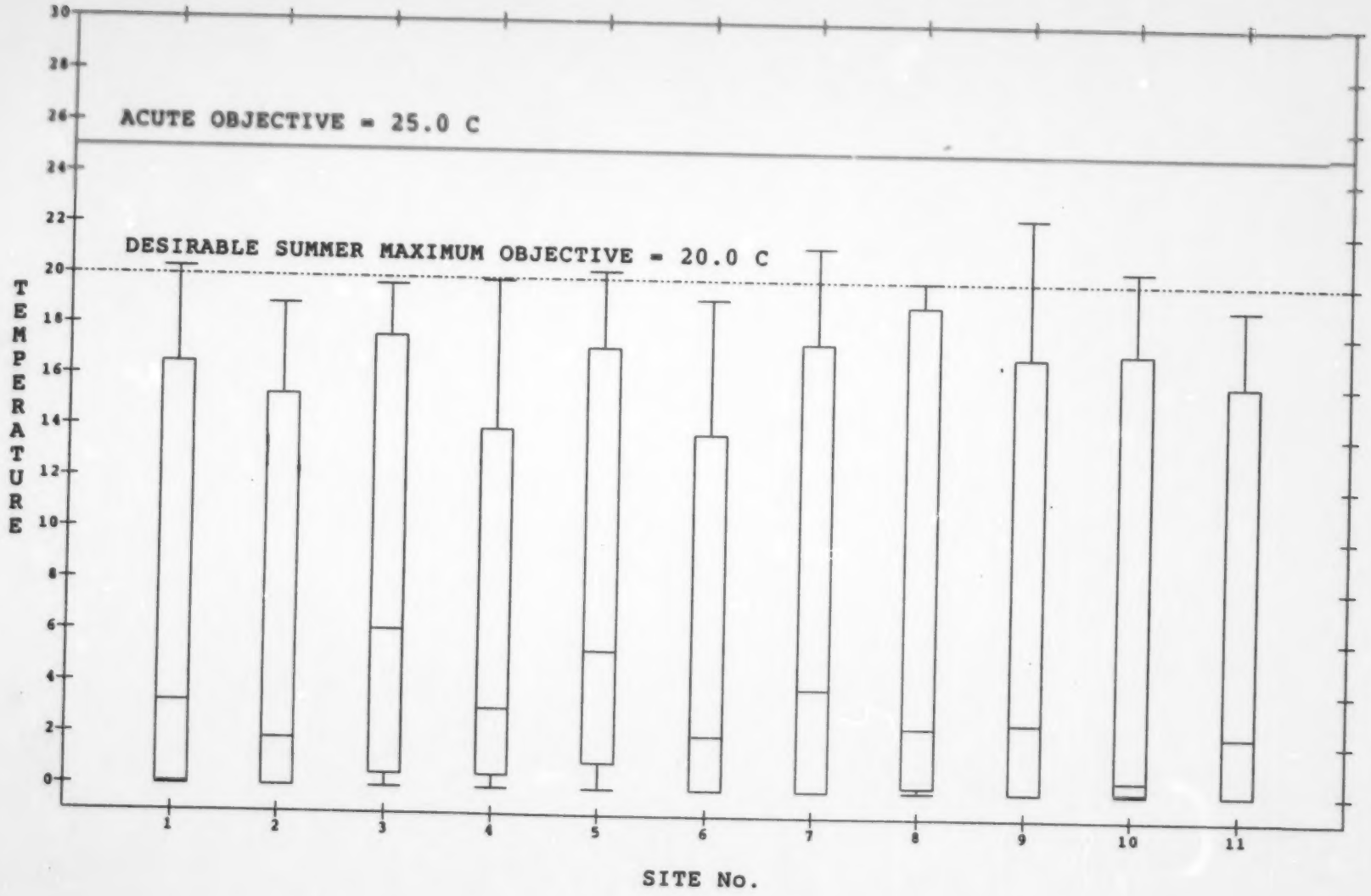


FIGURE 3: DISSOLVED OXYGEN (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

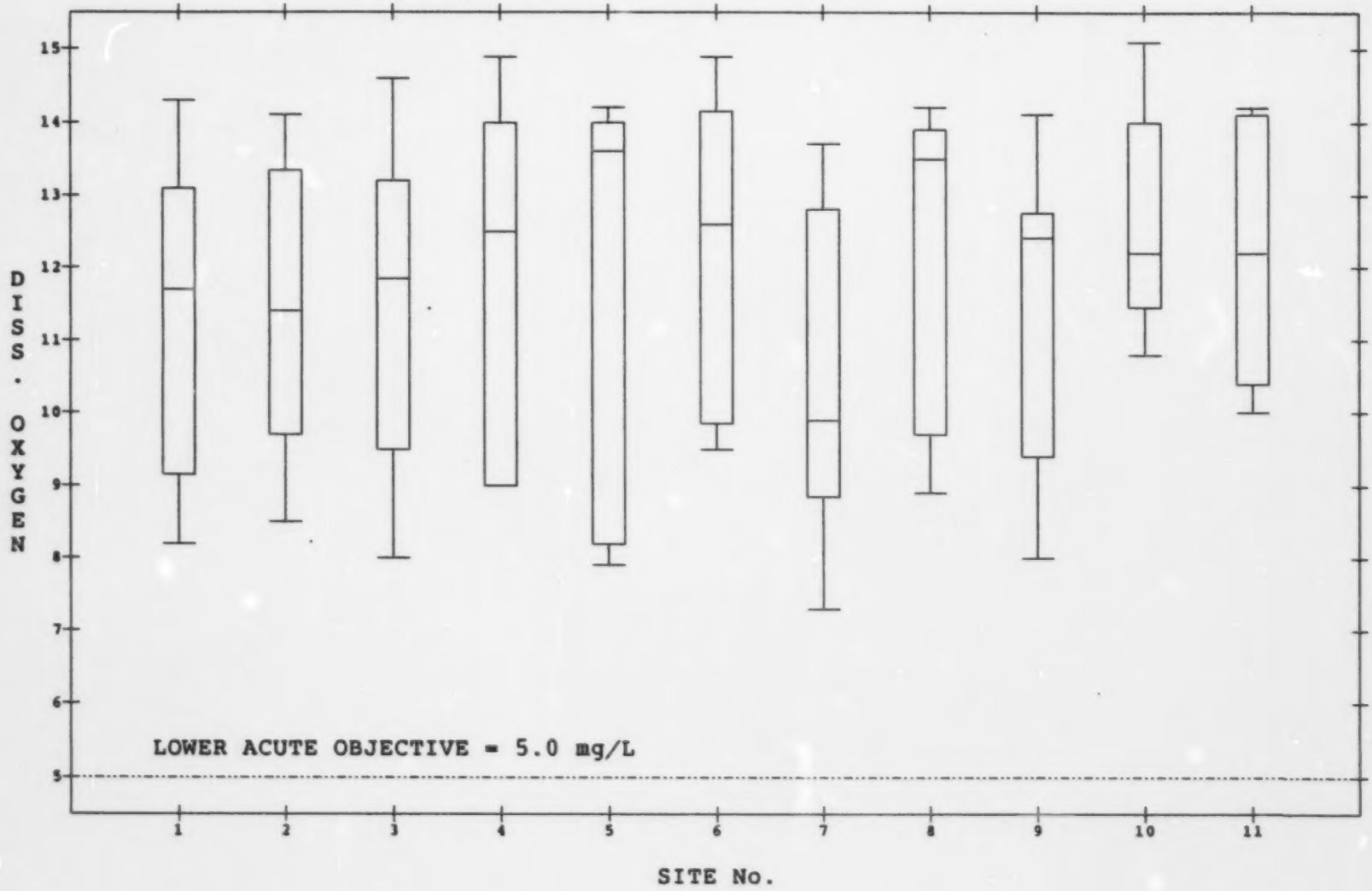


FIGURE 4: DISSOLVED OXYGEN (% SATURATION) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

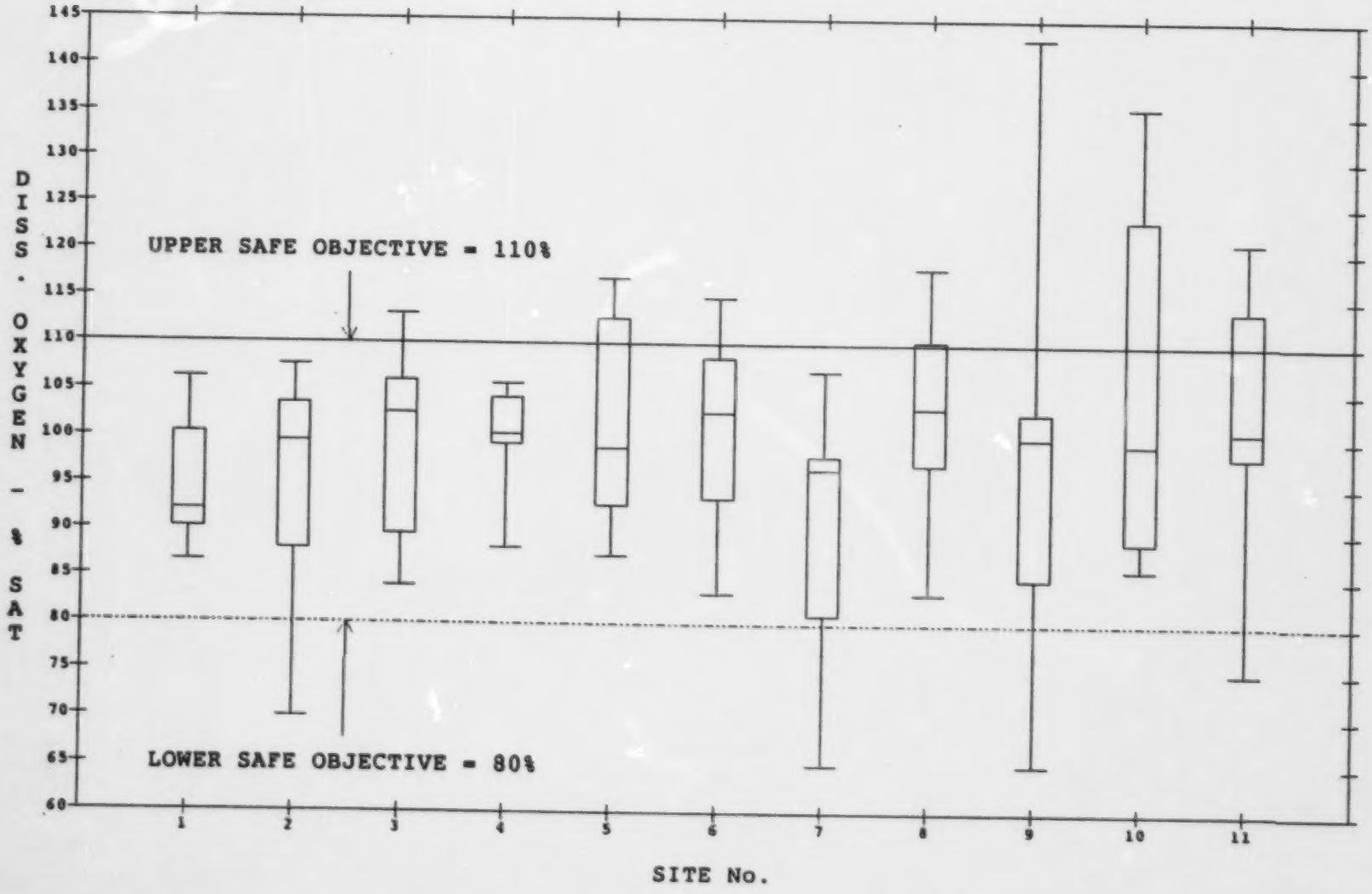


FIGURE 5: LAB MEASURED pH (UNITS) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

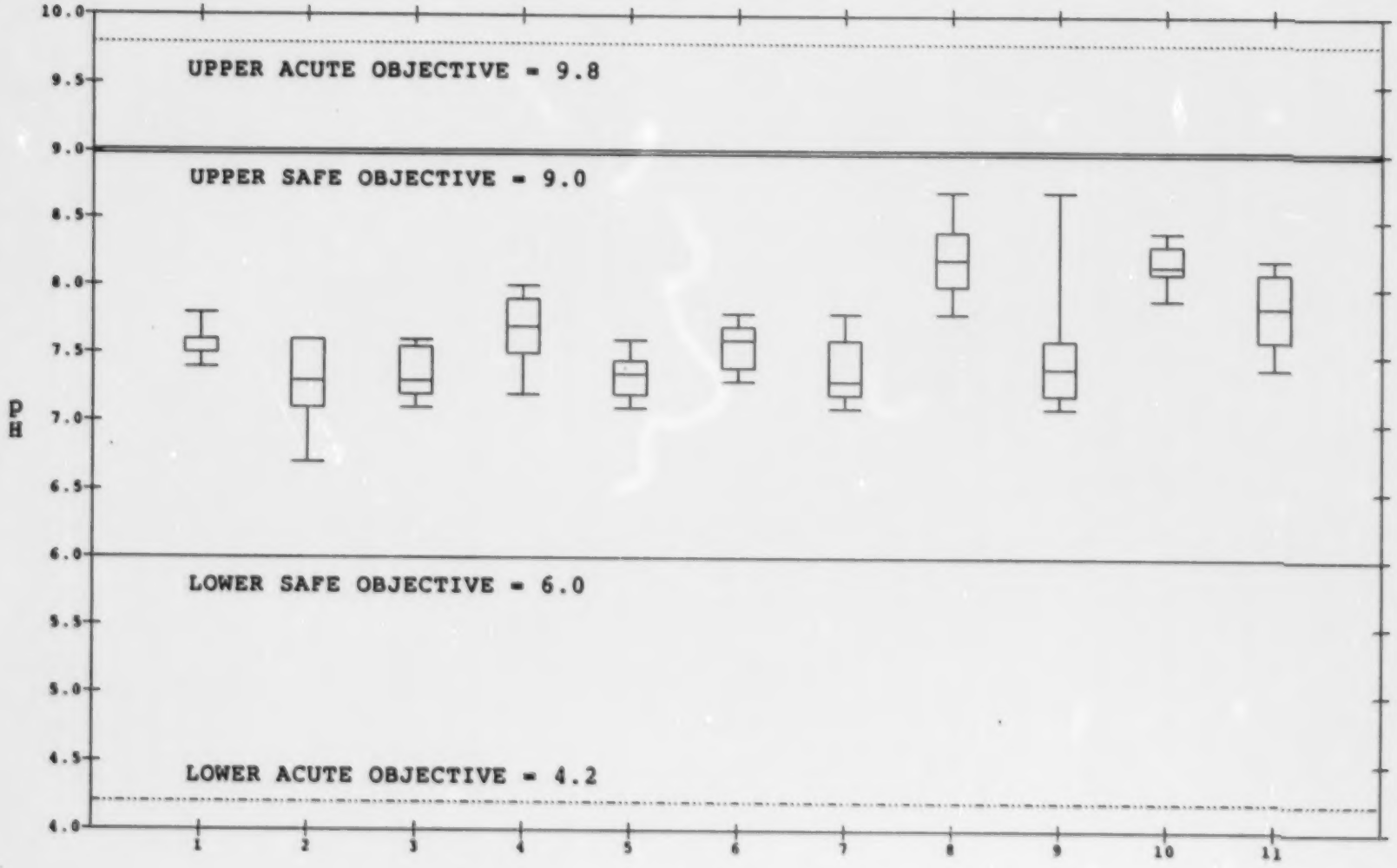


FIGURE 6: FIELD MEASURED pH (UNITS) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

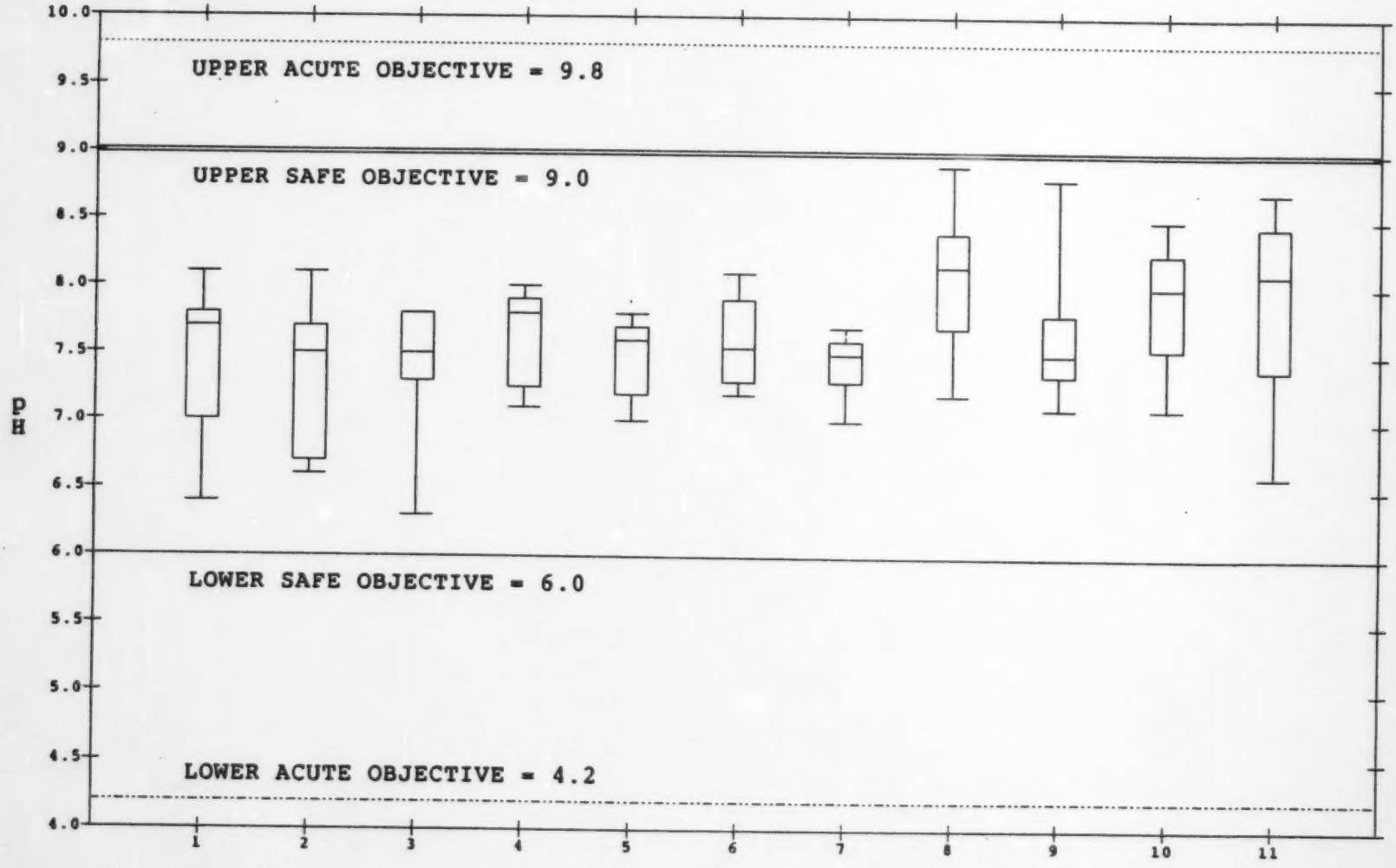


FIGURE 7: TOTAL PHOSPHORUS (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

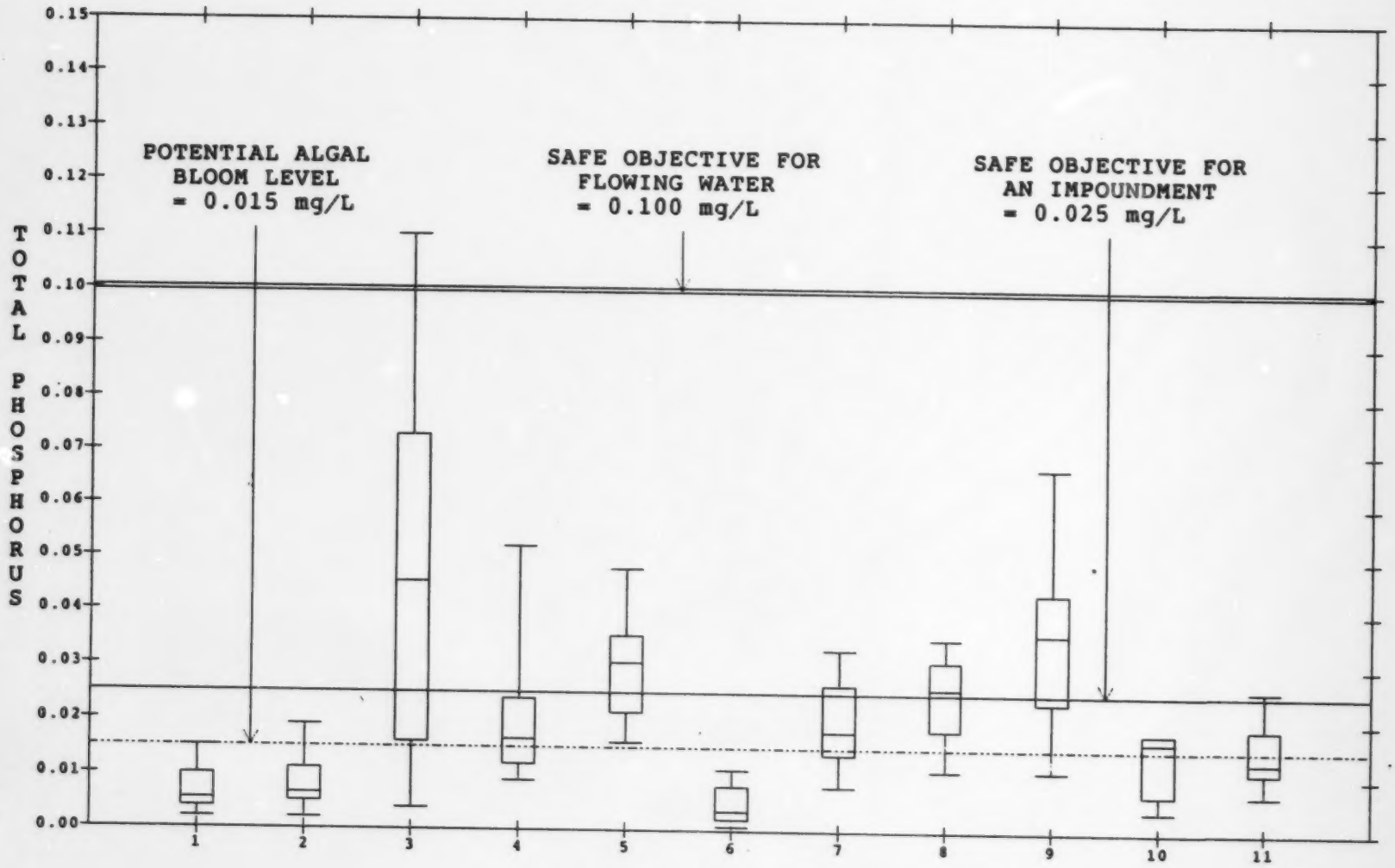


FIGURE 8: DISSOLVED PHOSPHORUS (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

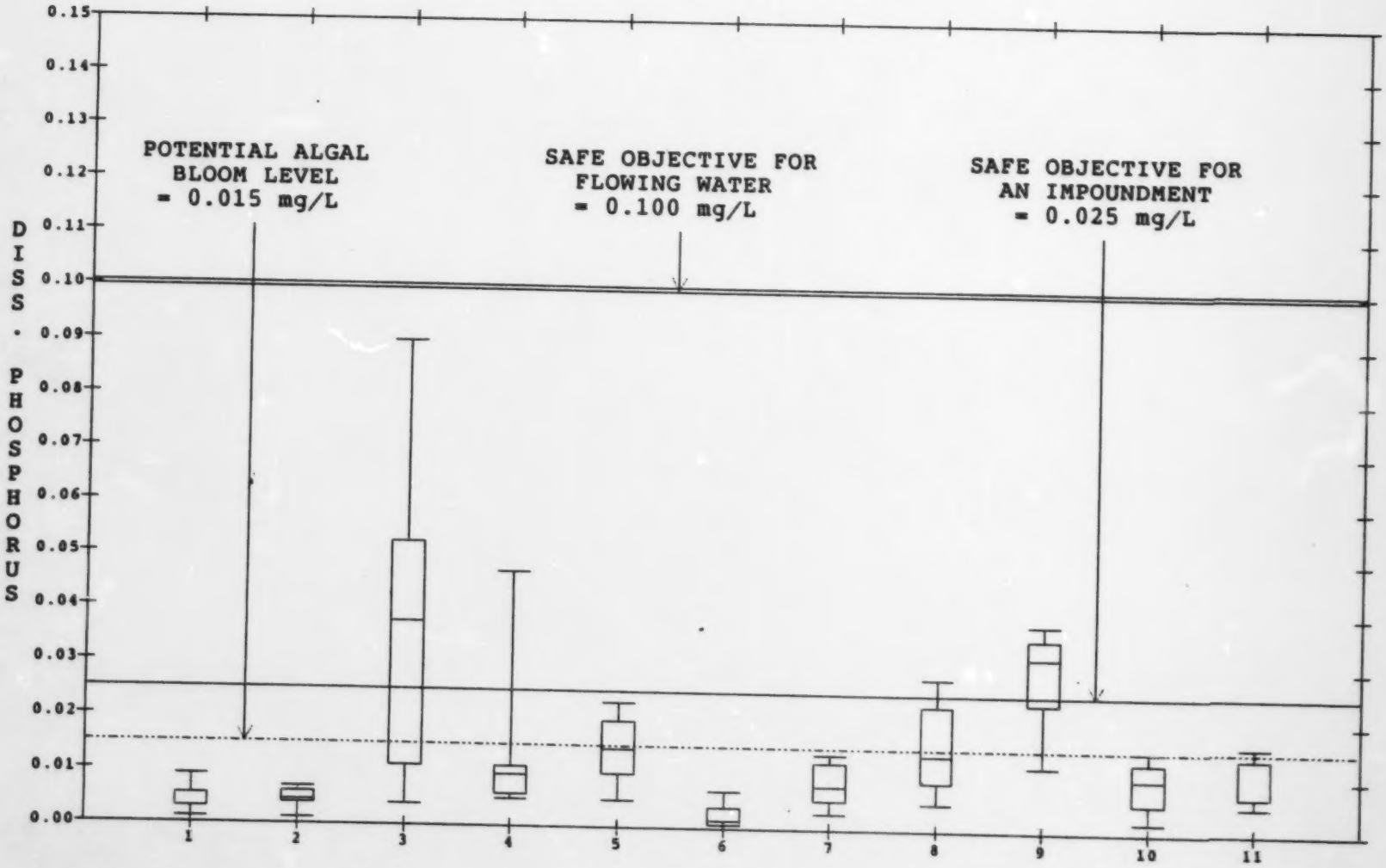


FIGURE 9: NON-FILTERABLE RESIDUE (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

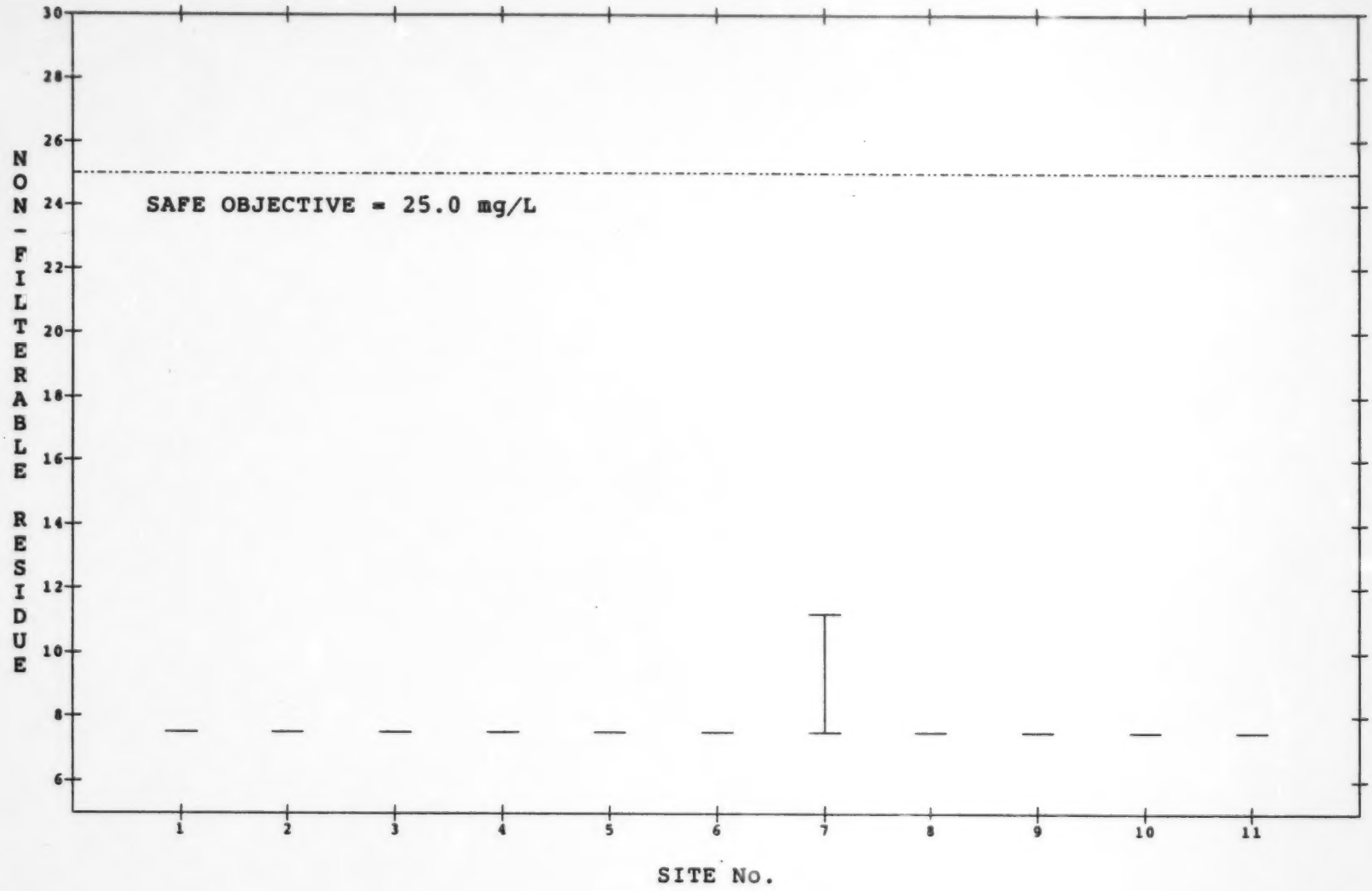


FIGURE 10: EXTRACTABLE ALUMINUM (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

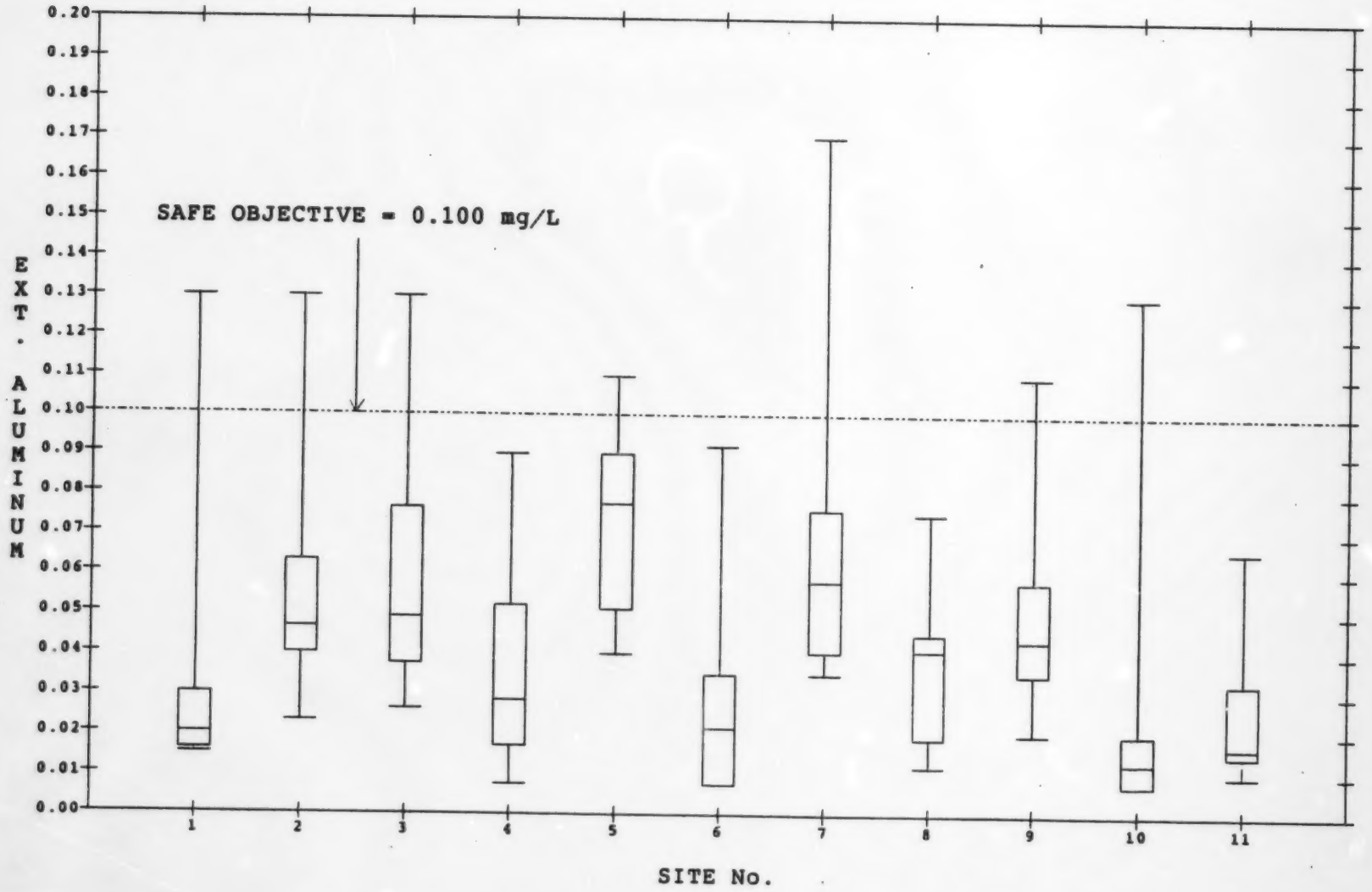


FIGURE 11: DISSOLVED ALUMINUM (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

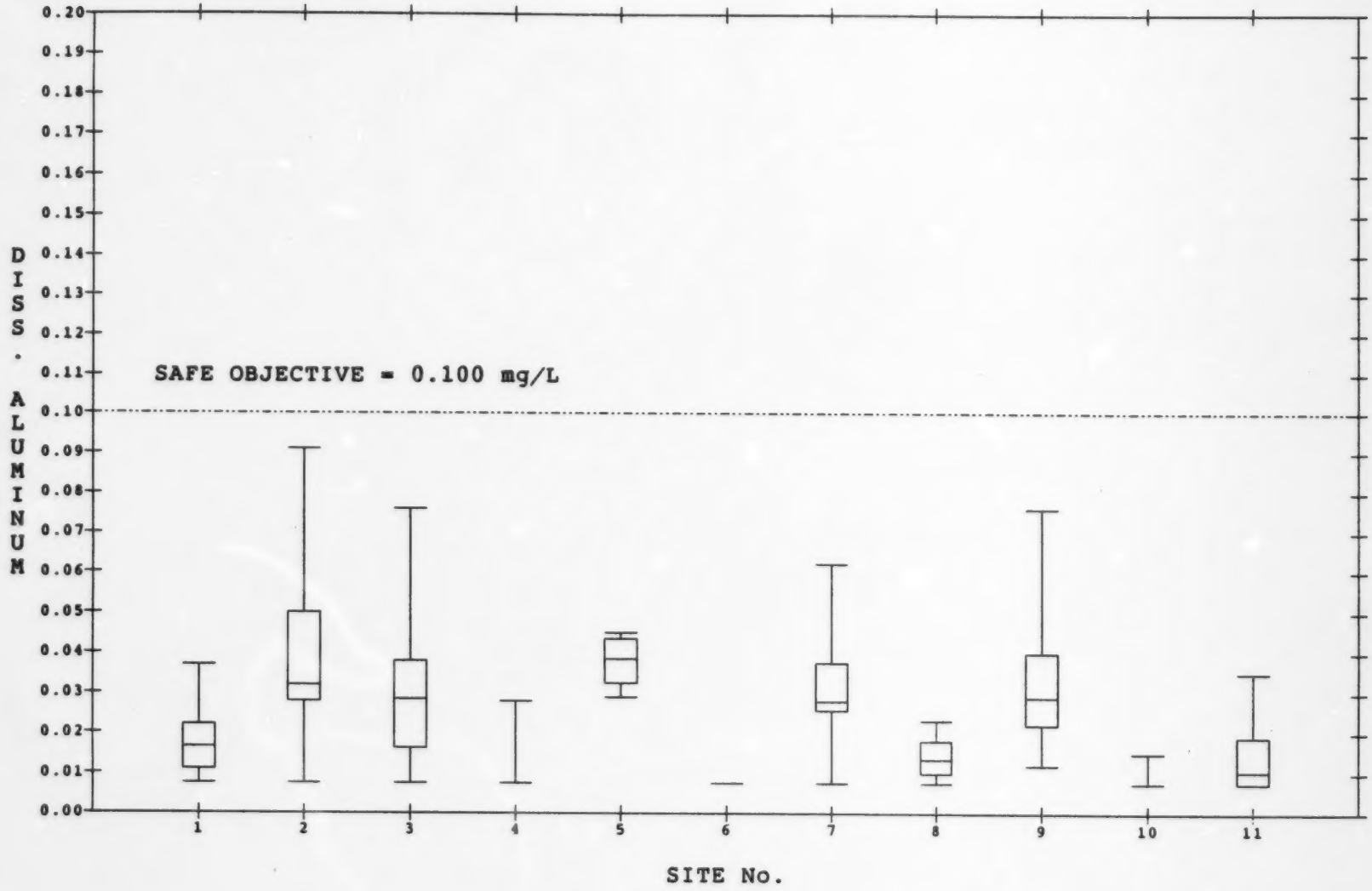


FIGURE 12: EXTRACTABLE COPPER (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

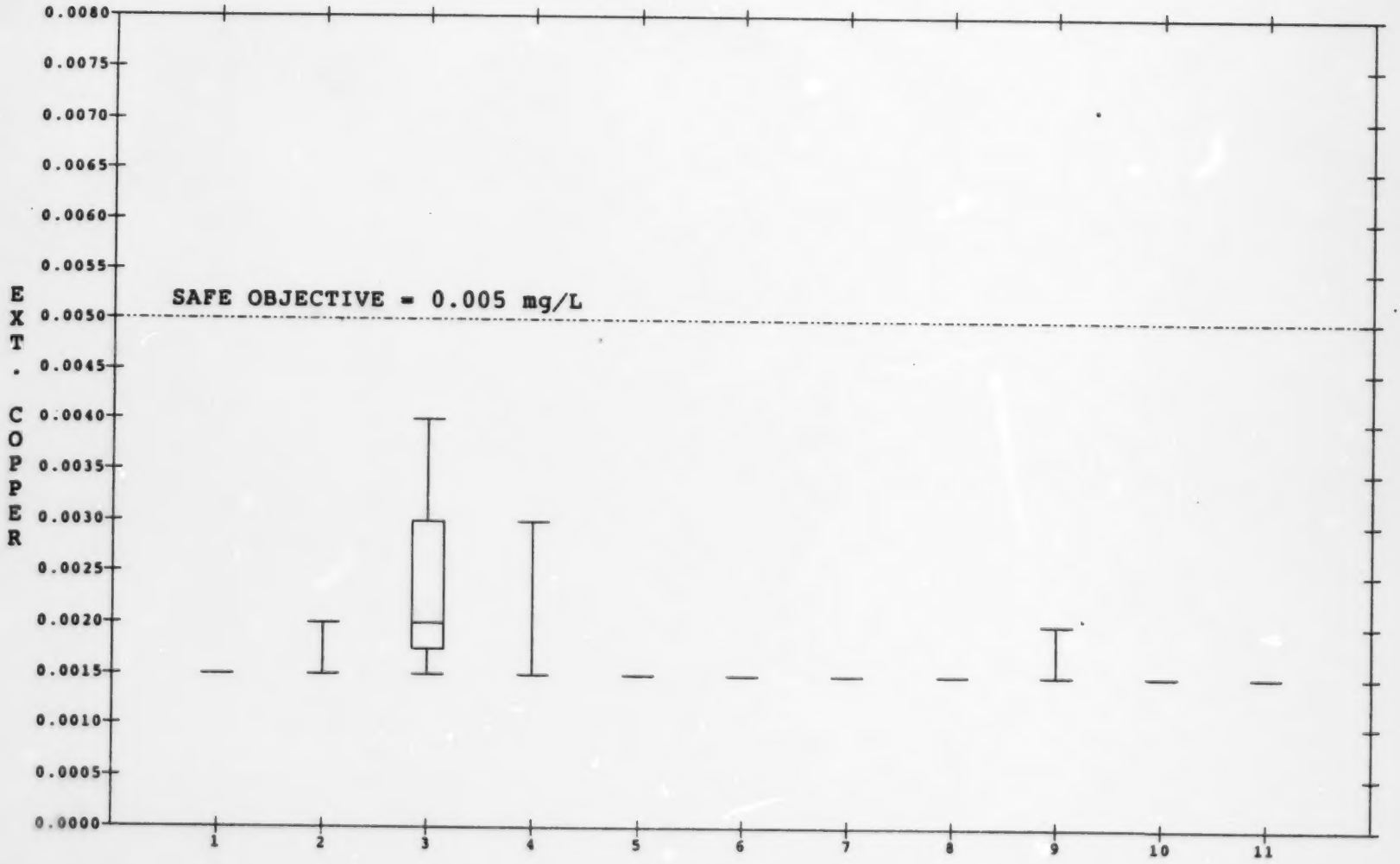


FIGURE 13: EXTRACTABLE LEAD (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

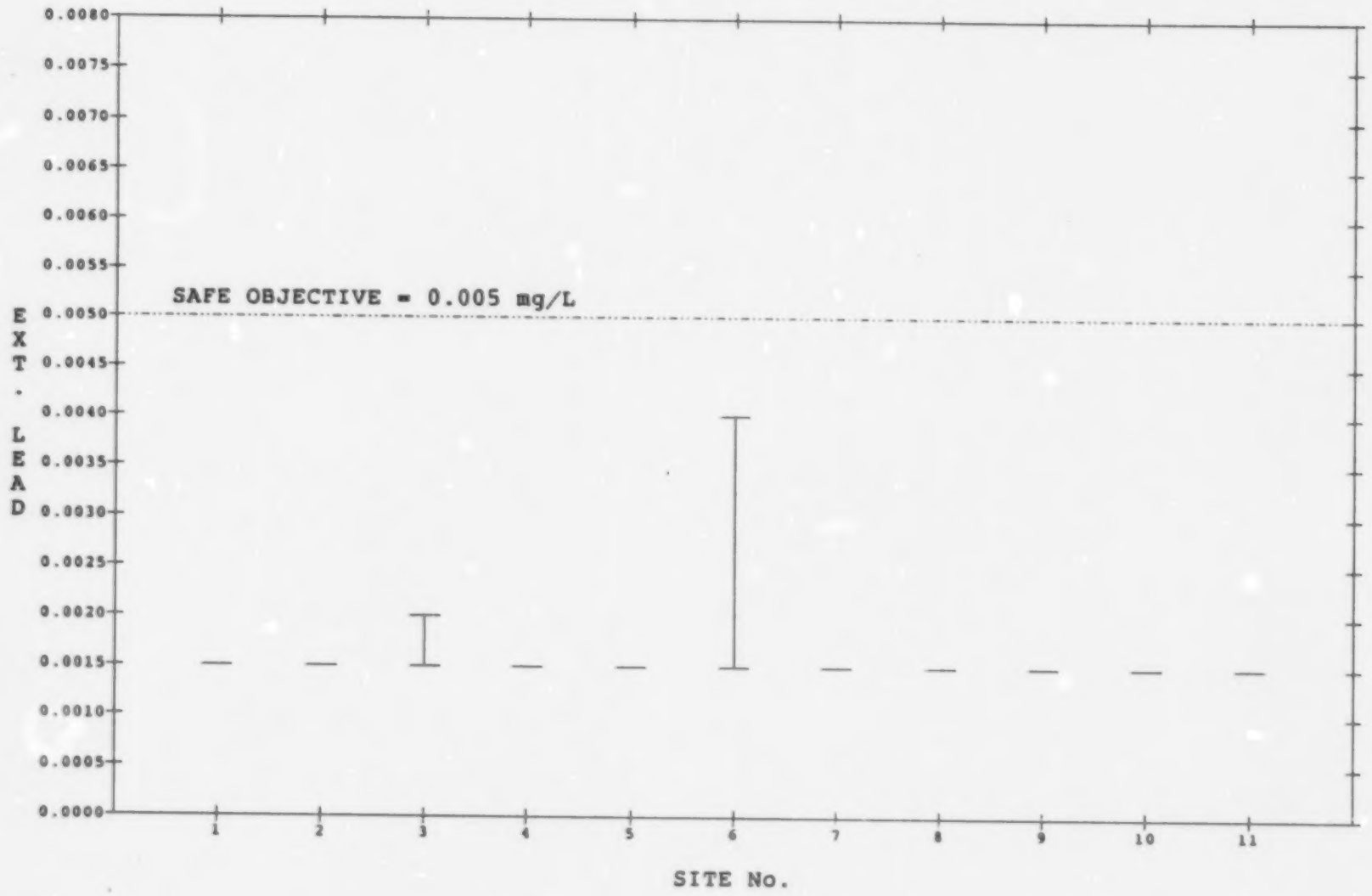


FIGURE 14: EXTRACTABLE ZINC (mg/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988

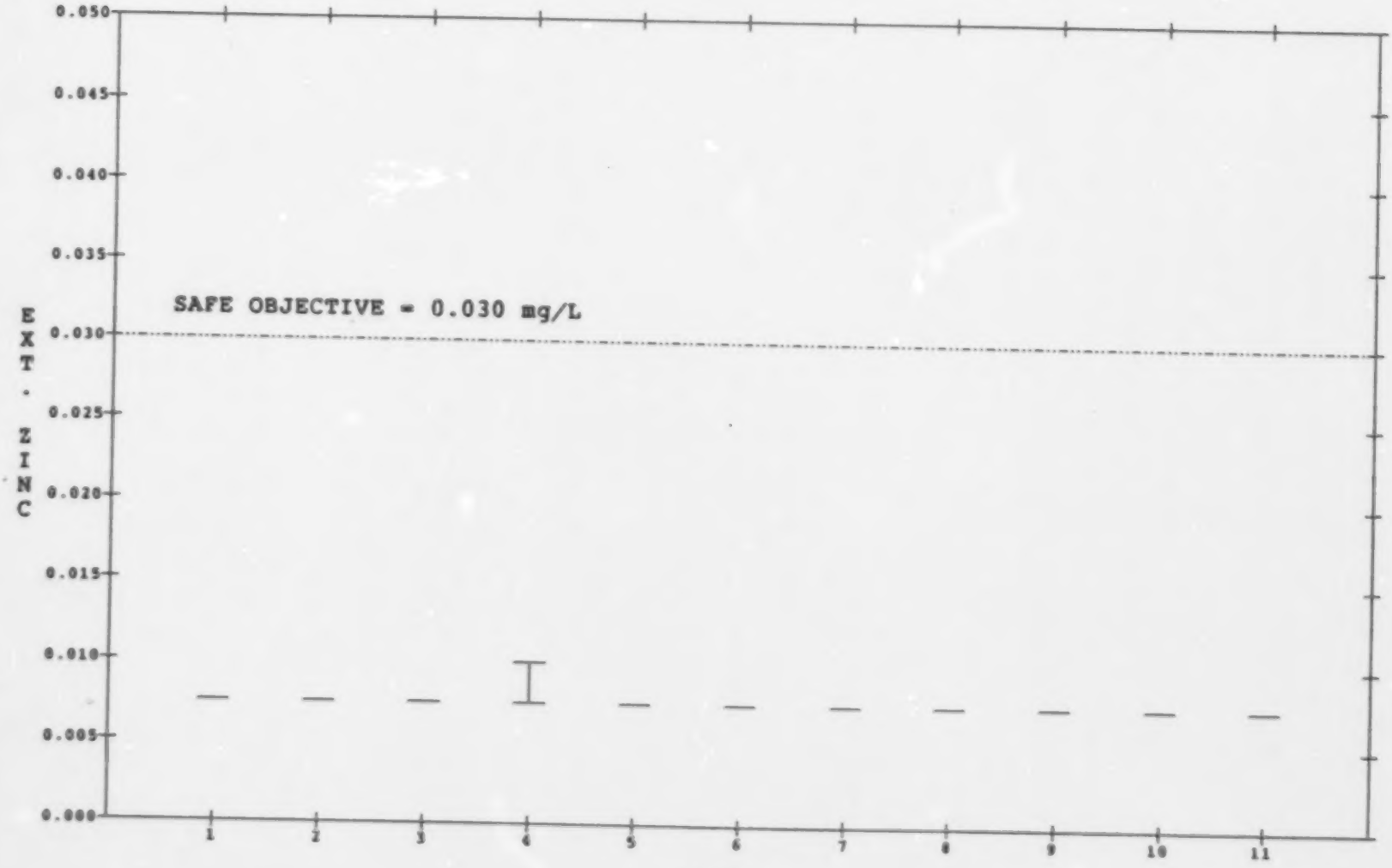


FIGURE 15: EXTRACTABLE MERCURY (ug/L) AT ELEVEN STATIONS IN THE INTERNATIONAL SAINT JOHN RIVER BASIN NETWORK OCTOBER, 1986 TO MARCH, 1988